

Inside Dope

By GEORGE
F. TAUBENECK



Learn to live and laugh —
thus delay your epitaph

Stories of the Week
Auto Air Conditioning
Sea Water Idea
Cooperative Advertising:
Bad Deal
Too Late Schmart
Sporting Note
Add Advertising Notes
Taps for Col. Jarrow

Stories of the Week

Tom tried to discourage brother-in-law Bill from belting the bottle so heavily. A brilliant idea struck him.

He casually suggested to Bill on a clear evening, that they go for a drive. Bill was agreeable. So they motored from a Chicago suburb down to Peoria.

Arriving at a high spot where they could see the myriad night lights of the Hiram Walker, National, and Century whiskey distilleries, Tom intimated:

"Bill, take a good look down there. You can see that you can't possibly drink all the bourbon they can make."

"Maybe not," Bill shot back. "But you gotta admit I've got 'em working nights."

"Have you ever been convicted in this court before?"

"No, sir, Your Honor."

"You look mighty familiar to me. Haven't we been face-to-face previously?"

"Yes, sir, Your Honor. I'm the bartender across the street."

"Um," yawned one bartender to another, "it's about closing time. Think I'll turn on my hearing aid and go home."

From deep in the country Ma and Pa came to see, for the first time, the sights in New York City. Quickly it was evident that the sights which interested Pa most were the handsomely garbed New York gals.

"Land sakes," complained Ma. "You act like you'd never seen women's legs before."

"That," stated Pa, "is just what I was a-thinkin' myself."

Auto Air Conditioning

Top-ranking automotive executive predicts privately that auto air conditioning unit sales will pass 400,000 this year. He also forecasts the sale of two million such units in 1961.

According to James Roche, general manager of Cadillac, auto air conditioning is "one of the significant sales stories of this decade." He says more than 45,000 Cadillacs will be air conditioned this year.

(Concluded on Page 16, Col. 1)

Cooling Industry To Center Fight On 2 N.Y. Proposals

NEW YORK CITY—The air conditioning and refrigeration industry is preparing to fight proposed New York City building regulations pertaining to the use and installation of room air conditioners, self-contained units, and central station systems.

A draft of proposed new rules relating to the installation of ventilating and air conditioning systems has been released by the New York City Dept. of Buildings.

The proposed rules would apply to all new installations and also to existing systems in which more than 50% of the existing system is changed, it was pointed out.

Industry opposition is being directly mainly at these two proposals:

(Concluded on Page 55, Col. 2)

News Inaugurates Heating Section

With this issue, AIR CONDITIONING & REFRIGERATION NEWS is publishing a new section devoted to news of "methods, products, and people" in the heating field.

The News has been reporting such activities in heating regularly, in response to the expressed wishes of many of its readers. This has been the result of air conditioning and refrigeration people doing more and more heating work, and heating people becoming active in year-round air conditioning.

Objective of the new Heating Section, which will appear at least once every month, will be to concentrate and dramatize news and feature articles on all aspects of heating—to provide NEWS readers with a comprehensive report on everything going on in heating that may be informative and useful to them.

4-Hp. Central Unit Tops '57 Mitchell Cooling Line

CHICAGO—An all-new factory-charged and pre-wired 4-hp. central air conditioner is now available from Mitchell Mfg. Co., Div. of Cory Corp., according to R. H. Lodge, sales manager of Mitchell's packaged air conditioner division.

Mitchell also introduced a new line of 2, 3, and 5-hp. blower coil units, a 5-hp. air-cooled residential air conditioner designed specifically for high capacity installations, and "Max-Cool" prefabricated duct kits for air conditioning installations where there is no ductwork or existing ducts are unsuitable.

TA-400 is the new air-cooled central unit which can be used either in attic or crawl space or

(Concluded on Back Page, Col. 1)

'57 Air Conditioning Lines Go On Display In Chicago Feb. 25-Mar. 1

13 Papers, 2 Symposiums Set at ASHAE Meeting

NEW YORK CITY—Presentation of 13 papers and discussions at two symposiums will provide valuable technical information for those attending the 63rd annual meeting of the American Society of Heating & Air-Conditioning Engineers which is scheduled to be held at the Conrad Hilton hotel, Chicago, Feb. 25-28.

Simultaneously with the opening of the annual meeting the 13th International Heating & Air-Conditioning Exposition will take place in the International Amphitheatre under the auspices of ASHAE and the management of the International Exposition Co.

According to Society President John W. James, Chicago, it is expected that both the annual meeting and the exposition will attract the largest attendance in the history of the organization.

(Concluded on Page 12, Col. 1)

Up 37% from '55

Fort Worth Installs 1,616 Cooling Units In Residences During 1956

By C. Dale Mericle

FORT WORTH, Texas—Paced by a new firm, contractors here air conditioned 1,616 residences in the Fort Worth area during 1956, a gain of 437 jobs, or 37%, over the 1,179 reported for 1955.

This was determined by AIR CONDITIONING & REFRIGERATION NEWS in its annual survey of local contractors and distributors, made with the cooperation and assistance of the Fort Worth Air Conditioning Association and two public utilities

—Texas Electric Service Co. and Lone Star Gas Co.

Details of the 1956 survey are summarized in the accompanying table, which breaks down the installations reported for 49 contractors.

(An analysis of the 1955 installations was published in the April 2, 1956, issue of the NEWS. The 1954 survey, which turned up 598 jobs, was described in the Nov. 8, 1954, issue.)

It is somewhat questionable

(Concluded on Page 46, Col. 3)

G-E Bows Half Size 1/3 Lighter Heat Pump

BLOOMFIELD, N. J.—A new "Weathertron" heat pump, 50% smaller in size and one-third less in weight than any previous model was introduced at the Home Builders Show in Chicago by the Weathertron Dept. of the General Electric Co.

Called the WT32D1, the new unit has 32% more cooling efficiency and 17% more heating efficiency than previous models, the company claims.

An air-to-air heat pump, the unit is said to be particularly adaptable for slab or crawl space home construction. It measures 30½ by 33½ by 46 in. Placed on an outside wall, it can project as little as 14 in. into the home.

Cooling capacity at ASRE rated conditions is 30,000 B.t.u.h., with approximately 30% latent capacity. Heating

(Concluded on Page 4, Col. 4)

"Previews" of exhibits at the International Heating & Air Conditioning Exposition, by those exhibitors who volunteered information on what they will show, appear throughout this issue, starting on page 17.

This "preview" material will serve as a handy guide for those who will attend the Exposition. For other readers, they will afford a review of some of the equipment that is available for 1957.

3 Room Unit Mfrs. Issue B.t.u. Ratings

WASHINGTON, D. C.—Three more manufacturers of room air conditioners have issued published literature giving the capacity ratings of their products in British thermal units per hour as tested and rated under the standard of the Air-Conditioning Engineers.

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450 To Exhibit Heating, Air Conditioning Lines

CHICAGO—With some 450 firms exhibiting their 1957 models of commercial, industrial, and residential air conditioning and heating systems and components, the 13th International Heating & Ventilating Exposition

Exhibit Hours

Mon., Feb. 25	2 p.m. to 10 p.m.
Tues., Feb. 26	Noon to 10 p.m.
Wed., Feb. 27	Noon to 10 p.m.
Thurs., Feb. 28	Noon to 10 p.m.
Fri., March 1	Noon to 6 p.m.

tion will open Feb. 25 at the International Amphitheatre here for a 5-day run.

The Exposition will be the

(Concluded on Page 55, Col. 2)

Perfection Offers 'Tuckaway' Unit To Lead '57 Line

CLEVELAND—A "Tuckaway" residential air conditioner, six room air conditioner models, three water-cooled commercial air conditioners, and a horizontal oil-fired furnace are among new products in the 1957 line of Perfection Industries, a division of Hupp Corp.

The company said a complete line of warm air furnaces and residential and commercial air conditioners is now being demonstrated to dealers by its wholesalers.

The new line will be shown at the 13th International Heating & Air Conditioning Exposition to be held in Chicago Feb. 25-March 1, according to Carl W. Millsom, vice president in

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New Bid Shopping, Peddling Bill Being Readied for Introduction In Congress

WASHINGTON, D. C.—The Council of Mechanical Specialty Contracting Industries, Inc., recently instructed its counsel to develop proposed legislation designed to meet all legitimate objections to the Federal Construction Contract Act which failed by a narrow margin of enactment at the last Congress.

The council has been reviewing provisions of this measure intensively for the past several weeks "in an effort to recommend the most practical and effective means of lessening the unfair trade practices of bid shopping and bid peddling on Federal public works."

It was expected that the revised measure, requiring listing by the prime contractor of mechanical specialty subcontractors on Federal public works,

would be ready for introduction in Congress in a few days. Several leading Congressmen have indicated a desire to sponsor this legislation, according to the council.

Frank Frazee Dies of Heart Attack at 45

AUSTIN, Texas—Frank Frazee, veteran in air conditioning sales engineering activity in the Southwest, died Jan. 22 here, victim of a heart attack. He was 45.

Frazee was prominent in the affairs of the American Society of Heating & Air-Conditioning Engineers, and had written some papers on marketing problems.

Custom Smelters Cut Copper Price 3/4c

NEW YORK CITY—Custom smelters last week cut the price for copper by 3/4 cents a pound to 34 cents.

This brings their quotation 2 cents a pound below the 36-cent price charged by domestic producers. The action is believed to have created some doubt about the stability of the 36-cent producer price.

Authorities noted the price of copper in London is about 4 cents a pound below that of U. S. producers, and Rhodesian and Belgian Congo output 2 1/4 to 3 cents a pound under that quotation.

Custom smelter companies say the flow of scrap to their plants last month reached an estimated 17,000 to 18,000 tons, biggest purchases since last May when the total was 20,817 tons.

R. N. Hall Elected IHACI President

LOS ANGELES—Robert N. Hall of Long Beach, was elected president of the Institute of Heating & Air Conditioning Industries for the coming year, according to R. E. Harkens, managing director.

An association of southern California manufacturers, suppliers, and contractors in the comfort field who hope to improve heating and air conditioning standards, the institute also elected three new vice presidents.

They are Stanley Skafte of Utility Appliance Corp., J. W. (Bud) Burke of Burke Engineering Co., and Gordon L. Payne of E. L. Payne Heating Co. Kenneth N. Robertson of Pacific Scientific Co. was chosen secretary-treasurer, it was added.

3 Employees Purchase Judson C. Burns, Inc.

PHILADELPHIA—Three employees of the company have acquired Judson C. Burns, Inc., local distributor of commercial refrigeration equipment and freezers, it was announced here recently.

Robert W. Brown becomes president, Sophie Oberhuber, secretary, and William G. Hoelzle, assistant secretary and treasurer.

Founded in 1910, Judson C. Burns distributes "Vimco" and "Sta-Kold" reach-in refrigerators and beverage coolers, Dunham-Bush cooling equipment, "Oasis" water coolers, walk-in coolers, and custom built units. It also distributes Victor freezers under the name "Burns Quality Food Club." The company owns the "Quality" range line and distributes parts nationally for it.

No immediate changes in operation are contemplated, according to Brown, but the commercial refrigeration division will be expanded by the addition of associated products, it was stated.

Carrier Purchases More Stock In Elliott Co.

WASHINGTON, D. C.—Carrier Corp. told the Securities & Exchange Commission it has bought 61,700 more shares of common stock in Elliott Co., bringing its holdings to 114,700 shares of common, or 21.5% of Elliott's outstanding common stock.

Principal products of the firm, according to its 1955 annual report, were turbines, electrical equipment, including motors and generators, transfer apparatus, industrial process equipment, such as power recovery gas turbines, centrifugal compressors and expanders, turbo charges and scavenging compressors for diesel engines, strainers, milkers, tube cleaners, and tube accessories and couplings, it was explained.

It is reported Elliott owns and operates plants in Jeanette and Ridgeway, Pa., Springfield, Ohio, and Newark, N. J.

Carrier also told the SEC it purchased 6,000 shares of Elliott's 5% cumulative preferred stock. Total purchase cost came to \$3,720,194. Elliott's 1955 financial report shows it had 534,352 shares of common and 24,396 shares of 5% cumulative preferred outstanding. Another 91,884 shares of 5% cumulative second preferred, which are convertible into 1-2-3 shares of common, also were outstanding, it was noted.

Net sales of Elliott in 1955 amounted to \$32,620,778 while net earnings were \$1,028,132. Net sales and income over the nine months ended Sept. 30 were \$33,125,819 and \$1,129,685, respectively, it was further reported.

John R. Caulk, Jr. Elected To St. Louis Union Trust Board

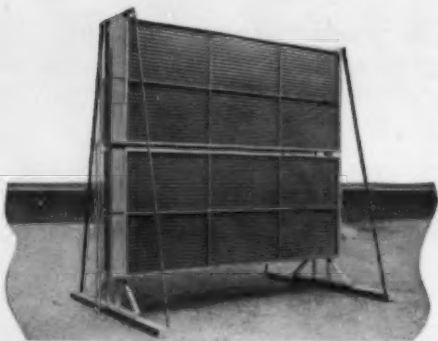
ST. LOUIS—John R. Caulk, Jr., executive vice president of Hussmann Refrigerator Co., was elected to the board of directors of the St. Louis Union Trust Co.

KRAMER UNICON

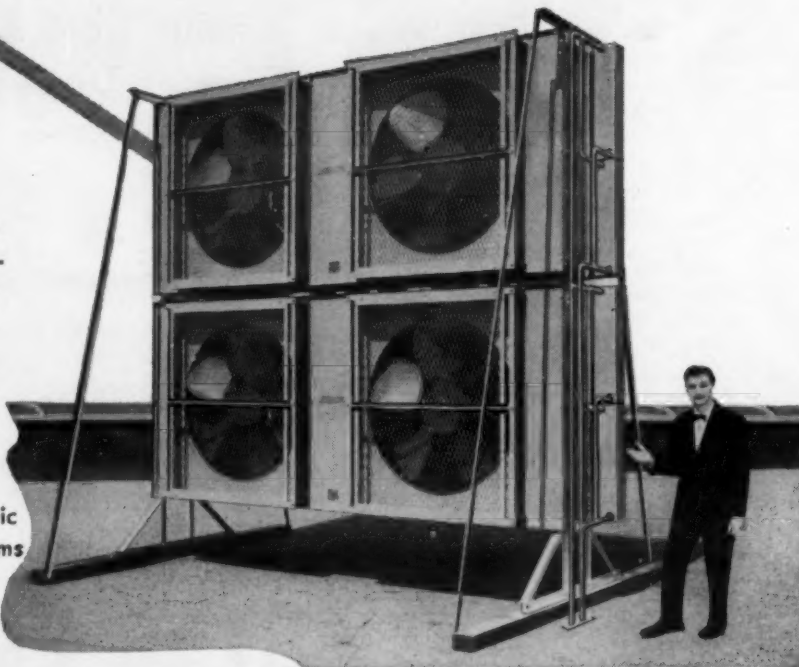
GETS BIGGER and

BIGGER

There is only one answer to large capacity condenser problems — the KRAMER UNICON. Every day more engineers plan larger tonnage installations — 50, 100 and even — 800 tons. And every day UNICONS are shipped to all parts of the world for giant-sized installations. No other air-cooled condenser can match the long, successful record of UNICON, backed by thousands of applications since 1937 — in the widest range of tonnages and climatic conditions. Your condensing problems can be best answered by use of the best — the KRAMER UNICON.



Space-saver UNICON, as illustrated, serves a 60-Ton air conditioning system, yet takes but 70 sq. ft. of roof space.

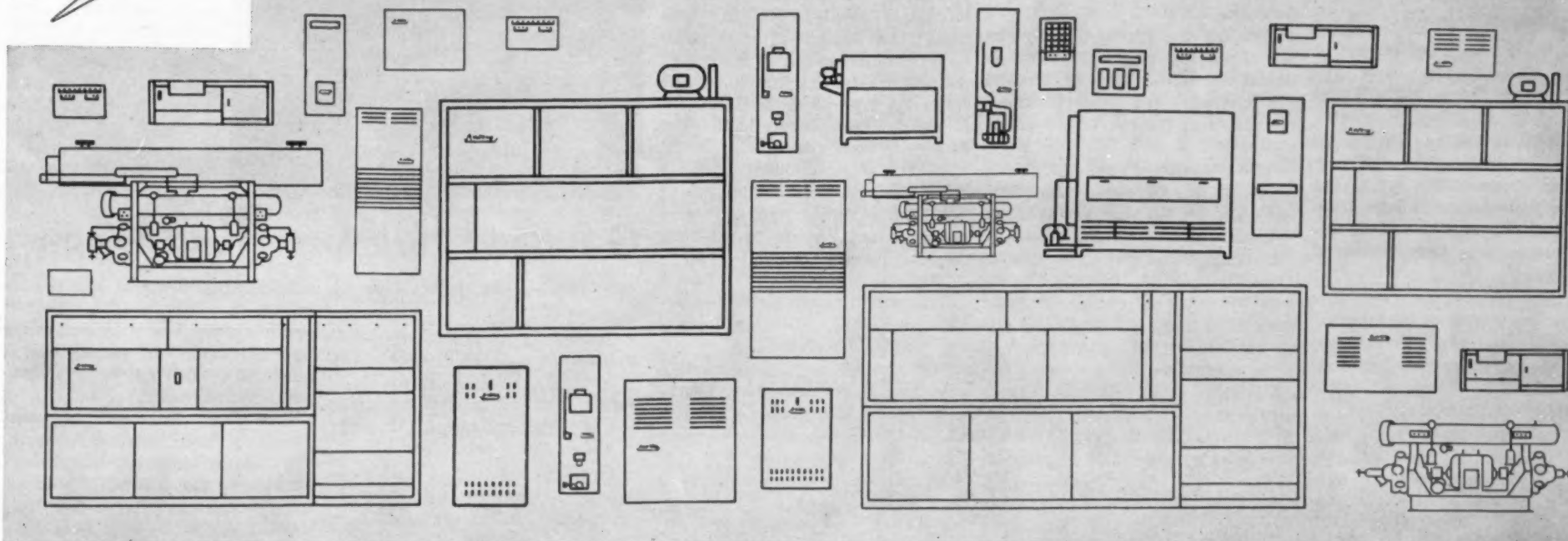


UNICON is a remote-type air-cooled condenser that requires no water. KRAMER UNICON can be used with any size compressor, REGARDLESS of horsepower. Any size refrigeration or air conditioning system can be air-cooled with UNICON, REGARDLESS of tonnage. UNICON requires less horsepower, less piping, is easier to install and costs less. KRAMER UNICON performs best — even in semi-tropical climates.

WRITE FOR BULLETIN U-210D

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286 models give Airtemp dealers greater opportunities for sales.

You don't miss sales due to an incomplete line... when you're an *Airtemp* air conditioning dealer. You can cool a room...a store...or a complete building. And whatever model is required—it's Chrysler-engineered for fast, economical installation and dependable, long-life operation. This means more sales—more profits for Airtemp dealers.

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Gentlemen:
Please rush full information on the Airtemp franchise

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ADDRESS _____

CITY _____

ZONE _____ STATE _____

To Develop Chilled Water Fan Coil Unit Testing, Rating Code

NEW YORK CITY—A project is under way to develop a testing and rating code for chilled water fan coil units, the Institute of Boiler & Radiator Mfrs. announced.

I-B-R is sponsoring the project in cooperation with the Air-Conditioning & Refrigeration Institute and the Mechanical Contractors Association of America.

Type of unit to be codified is defined as "a forced circulation heat exchanger with an integral fan, which may be used for heating, cooling, or dehumidification or any combination thereof."

In making the announcement, Robert E. Ferry, I-B-R general manager, stated that many members of I-B-R manu-

facture such equipment. In view of the growing interest in liquid heating-cooling systems, Ferry noted, it is deemed important that a code be developed immediately for accurate determination of outputs.

Testing and rating procedures for these fan coil units will be patterned after the established I-B-R Codes for boilers, baseboards, and finned tube type of radiation.

The committee responsible for developing the new code consists of: D. E. Morgan, Warren Webster & Co. (chairman); B. C. Brown, National-U. S. Radiator Corp.; O. M. Maring, American Radiator & Standard Sanitary Corp.

Assisting the committee are representatives from Acme Industries, Fedders-Quigan Corp., University of Illinois (Prof. W. S. Harris), Mechanical Contractors Association of America, Modine Mfg. Co., Worthington, and York Div. of Borg-Warner.

Levitt Wins NARDA '56 Creative Salesman Award

CHICAGO—Lloyd B. Levitt, Walker's Appliance Center, Highland Falls, N. Y. was named as winner of the "creative retail salesman of the year" contest sponsored jointly by the National Appliance & Radio-TV Dealers Association and the Ladies Home Journal.

Levitt was awarded a check for \$500 and a silver plaque at NARDA's recent annual convention here. Winners in four other divisions follow:

Major Appliance Div.—Edwin G. Corwin, Corwin's Appliances, Urbana, Ohio; Electric Housewares Div.—Melvin Ross, Griffiths Appliance Center, Albuquerque, N. M.; Complete Kitchens Div.—M. H. Standridge, Casey & O'Brien, Madison, Wis.; Radio-TV Div.—Warren L. Snyder, Zimmerman's Service, Inc., Elkhart, Ind.



LATEST development is G-E's new all-electric home builder "Weathertron" heat pump introduced for use in the residential market. It is shown here located at the bottom of a linen closet.

G-E Bows Half-Size Heat Pump--

(Concluded from Page 1, Col. 3)

capacity at 70° F. d.b. return air and 0° F. d.b. outside air is 15,000 B.t.u.h. At 40° F. d.b. outside air, it is 30,000 B.t.u.h. Supplementary heaters totalling 5 k.w., will add 17,050 B.t.u.h. to the heating capacity.

The new unit serves as a horizontal, vertical, or down-flow air

conditioning system. Air distribution is available for ductless applications. There is sufficient fan capacity for small round duct "Air-Wall" type systems, the company said.

Servicing can be done conveniently from inside or outside. The return air grille—an accessory—and the filters may be located remotely from the unit when installed in a tucked-away waste space.

The WT43D1 is available for 230-volt, single-phase, 60-cycle power supply.

It incorporates a replaceable sealed "Freon-22" refrigerant system with a hermetic motor compressor. Other features include direct drive fans and a built-in efficiency indicator that protects the unit and shows when filters need replacement.

The supplementary heaters are installed and internally wired at the factory. An outdoor thermostat, for control by means of outdoor temperature, is also factory installed.

U.S. May Expand Study of Frozen Food Time-Temp

WASHINGTON, D. C.—Expansion of its research work on time-temperature tolerances of frozen foods is being considered by the Agriculture Dept.

This is one of the top recommendations of USDA's Refrigerated and Frozen Products Research Advisory committee following its meeting here.

Other recommendations for new or expanded research:

How to retain "fresh cooked" flavor in pre-cooked frozen poultry; effects of fluctuating temperatures on fresh fruits and vegetables; packaging requirements for frozen foods and other processed foods; development of best procedures and equipment for freezing bakery products.

In addition, the committee recommended development of new meat products and expansion of research to provide fundamental and technological information needed to develop new prepared frozen foods and to improve quality and stability.

ASRE Honors Sorber

SAN FRANCISCO—In recognition of his scientific contributions to the refrigeration industry, the American Society of Refrigerating Engineers recently presented Glen Sorber with an engrossed copy of a resolution passed in his honor.

Presented by Wally Hulse, representing the San Francisco section of the group, Sorber was honored for his work with many of the frozen food plants in the western states, it was stated.

FLUOR the most dependable name in COOLING TOWERS

FLUOR Series 3 Cooling Towers are designed specifically for central station air conditioning and refrigeration systems. They offer a low profile with no orientation limitations. Their standard design meets all local and regional building codes. For dependable performance, the Series 3 is unexcelled—its basic concept having been proven in thousands of critical industrial installations!



NO CORROSION MAINTENANCE

Low maintenance, noncorrosive features include heart or better redwood framing and filling; cement asbestos sheathing and louvers; enclosed redwood and stainless steel water distributing system; plastic, nonclogging spray nozzles; and, heavily galvanized motor and gear support.

EASE OF ERECTION

Accomplished in the Series 3 by simplicity of structural design and economy of prefabricated and preassembled parts. Erection can be made consistent with the timing of overall construction program with or without the services of a Fluor superintendent.

COUNTERFLOW COOLING

The Counterflow principle (water and air moving counter-current to one another) is recognized and proven to be the most efficient method of cooling. Fluor's adaptation of tower-to-principle is evidenced by the high performance characteristics inherent in the Series 3.

NATIONWIDE SALES & SERVICE

Fluor Air Conditioning and Refrigeration Cooling Towers are available through exclusive representative companies in all major market areas. Experienced service and erection personnel are strategically located to render close customer contact when and where needed.

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New York City — Fluor Products Co.

... or contact FLUOR PRODUCTS COMPANY, P. O. Box 510, Whittier, California

Senate Unit May Push Probe Into Mfrs. To Honor Dr. Willard, 4 Others Service Contract Arrangement Complaints For Air Conditioning Contribution

WASHINGTON, D. C.—Complaints from appliance distributors about franchise contracts and from independent radio-TV servicemen who have charged that some manufacturers "make it hard for them to stay in business" because of manufacturer-controlled service contract arrangements may cause the Small Business committee of the Senate to go ahead with public hearings in the current session of Congress, it was reported here.

In addition, a broadened anti-trust and price discrimination inquiry into developments in the distributive trades is likely to be undertaken this year by both the Justice Dept. and the Federal Trade Commission, it was learned. Various wings of retailing and wholesaling are due for scrutiny, government officials confirmed.

At the same time, three separate investigations are going on concerning merger developments in the household appliance industry.

The Justice Dept. has been making one "study" for the last two years, while the other inquiries are being carried on by Congressional committees.

Justice Dept. officials indicated this agency is interested in such mergers as the Philco-Bendix deal last year, in terms of how such mergers and acquisitions tend to reduce competition.

The Senate Small Business committee has been probing mergers and acquisitions involving makers of radios, TV sets, household washers and dryers, and similar products in terms of what happens to dealers and franchise relationships.

About a year ago, this committee got a number of protests from distributors about franchise contracts covering household automatic washers and similar items. The committee was told by distributors that sometimes they had their dealer

franchise contracts canceled on short notice, after making "substantial investments" in distribution facilities.

The Senate Judiciary Anti-Trust subcommittee has been investigating corporate merger trends in all lines of business, including household appliances. This group may, it was reported, go into appliance industry mergers at public hearings this year.

CHICAGO—Dr. Arthur Cutts Willard, president emeritus of the University of Illinois and a past president of the American Society of Heating & Air-Conditioning Engineers, and four former staff members of the university, are to be honored at an informal reception and dinner for both men and women to be held at the Conrad Hilton hotel here on Monday, Feb. 25.

The affair is being planned by

an informal committee comprised of staff members, alumni, and friends of the university to mark Dr. Willard's and his former associates' many contributions to heating, air conditioning, and ventilation.

Friends of Dr. Willard, Dr. Raymond B. Allen, Dr. H. H. Mitchell, Dr. Robert W. Keeton, and Prof. A. P. Kratz, and friends and alumni of the University of Illinois—especially

those in the heating, air conditioning, and ventilation industry—are urged to attend the event. Tickets are available from A. C. Willard Committee, Room 1106, 6 N. Michigan Ave., Chicago 2.

Discuss Conditioner Use Law

ROCHESTER, N. Y.—The need for an ordinance governing the use and installation of air conditioning systems was cited at a meeting of the Henrietta Planning Board. The suggestion is centered on a water conservation clause calling for water recovery systems with any unit of 3 hp. or more.

186*

BRUNNER
SINCE 1906

WHOLESALESALE ARE ALL OVER THE MAP!

*
Yes, 186 Brunner wholesalers... from coast to coast... place you within easy distance from a Brunner Supply Depot. Every Brunner Wholesaler carries a stock of Brunner Condensing Units and parts, and is authorized to handle all warranty claims. Here's the fastest, the most complete refrigeration and air conditioning distribution service in the industry. No lengthy delays, no red tape. Your Brunner Wholesaler is ready to meet your delivery requirements.

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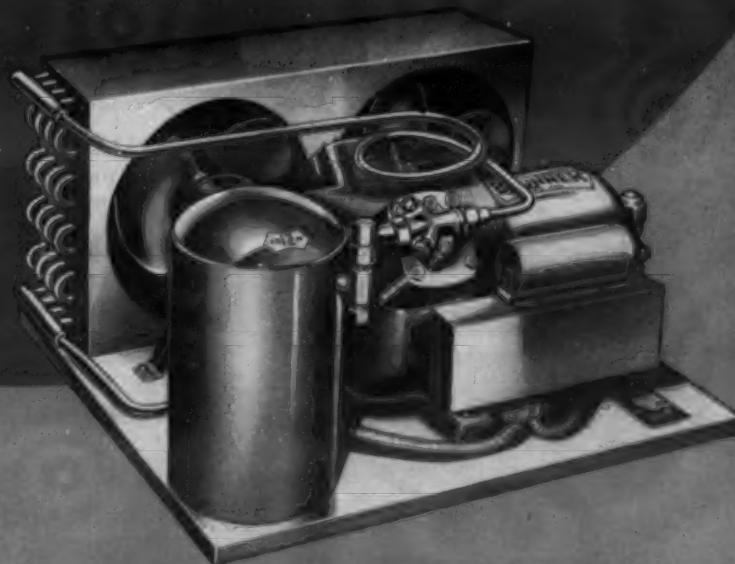
A complete list of Brunner wholesalers will be mailed to you on request.

BRUNNER-METIC semi-hermetic
Condensing Units available from
1/4 H.P. through 3 H.P.

BRUNNER OPEN-TYPE Condensing
Units from 1/4 H.P. through
100 H.P.

BRUNNER
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BRUNNERIZE FOR DEPENDABLE REFRIGERATION AND AIR CONDITIONING



Electronic Brain Memorizes Orders

MILWAUKEE—Believed to be the first order placed by an industrial firm in this country, Cutler-Hammer, Inc. here is installing a "Univac" file-computer system that can electronically memorize up to 1.8 million separate items of information at one time.

Leasing the machine, made by Remington Rand Univac Div. of Sperry Rand Corp., is intended to speed up operations in its order processing inventory control, and pay roll departments, a Cutler-Hammer spokesman said.

Turning out the correlated data on each transaction at speeds up to 1/60 second, the machine can process 100,000 transactions a day. Expected to be in operation by the end of February, the unit also will be able to perform analysis projects that are otherwise too time consuming to be practical, the company stated.

Significance of Du Pont Residential Air Conditioning Survey to Dealers

Buy from 'Specialists'; Many Would Buy If Called Upon, Best Prospects Have Experience; What Can Be Improved

CINCINNATI—"People would appear to want to buy from an air conditioning specialist," is one of the major conclusions reached in the du Pont survey of central residential air conditioning.

"Nearly seven out of 10 central air conditioning owners who installed air conditioning after they had occupied the house reported that they bought their unit from an air conditioning engineer or contractor. This would seem to indicate a desire to deal with an air conditioning specialist," the report states.

This was disclosed by Ralph

A. Crane, manager of market research for the du Pont Kinetic Chemicals Div., in a presentation of highlights from the survey at the 43rd annual convention of the National Warm Air Heating & Air Conditioning Association.

(Preliminary results of the survey were first revealed in the Oct. 29 issue of AIR CONDITIONING & REFRIGERATION NEWS. This discussion gives additional facts.)

In the survey, which was conducted for du Pont by W. R. Simmons & Associates Research, Inc., 1,671 households were in-

terviewed. These consisted of 605 known owners of central air conditioning, 302 neighbors of these owners, many of whom themselves had central systems, and 764 non-owners.

Interviews with "owners" and "neighbors" were conducted in 27 metropolitan areas "expected to represent more than 75% of all present owners" while "non-owners" were selected in 53 widely scattered geographic areas said to represent 40 million of the 49 million households in the country.

"Ownership of central air conditioning is about equally

divided between those who installed it after they were living in the house and those where it was installed before the house was occupied," Crane said.

For "owners" this broke down as 48% before occupancy, 52% after occupancy; for owning "neighbors" it was 71% before occupancy, 29% after.

Only 6% of those who installed air conditioning after occupancy were contacted about buying a system before they considered installation, mostly by a salesman visiting the home although phone calls and direct mail were also employed.

"So you see that even among occupied homes, the direct selling effort on central air conditioning has been very low," Crane told the convention. "This lack of selling effort was also found in the residential room air conditioner market. This finding indicates how important other mediums have been in selling the air conditioning idea. It also points to the real opportunities for more concerted direct selling effort," Crane declared.

Of special interest to the trade was the survey's attempt to determine where air conditioning was purchased by those who had it installed after occupying the house. Answers to this question showed:

Type of Dealer	%
Plumbing and heating contractor	12
Electrical appliance dealer	4
Air Conditioning engineer or contractor	68
Warm air heating equipment dealer	11
Sheet metal contractor	3
Other	2

Noting the predominance of the "air conditioning specialist," the du Pont survey report comments, "Based on this, dealers or contractors who want to sell the residential air conditioning market might be well advised to include a statement on air conditioning in their telephone book listings, advertising, and other business references."

In most cases (81%) "people talked to no dealers other than the one from whom the unit was purchased," the survey discloses. Reasons given for buying from the particular dealer varied:

"Did other work, such as heating work, previously—27%.

"Known personally by respondent—22%.

"Offered best estimate, right price—18%.

"Reliable, good reputation—18%.

"Carries desired brand of unit—13%.

"Recommended by friend, neighbor—11%.

"Known as specialist, represents good firm—7%.

"Advertising, dealer salesmanship—2%.

"Recommended by contractor, architect, builder—2%.

"Special buy from manufacturer—2%."

(Du Pont explains the above arithmetic: "Some respondents gave more than one answer.")

"Just as was found to be the case with room air conditioners, there is little shopping around, even for central air conditioning equipment," Crane said.

"This means that the dealer who first attracts a potential buyer has a good prospect for a sale. This highlights the im-

portance of dealer selling, merchandising, and advertising efforts to attract potential buyers to his place of business.

CONFIDENCE IN DEALER MORE IMPORTANT THAN PRICE

"Confidence in the dealer and his reliability and reputation are far more important than price to the prospective buyer. A dealer's selling and advertising efforts should thus create a feeling of confidence," du Pont suggests.

"The fact that a relatively high percentage of dealers had also done the heating work would indicate the importance of the heating dealer in this market. Many ready-made prospects would be those homes where a dealer has already made a heating installation."

Likewise of interest to contractors were the answers of "non-owners" and "non-owning neighbors of owners" to the question: "If it were decided to buy a central air conditioning unit today, who would be likely to be contacted?"

"Non-owners" replied: heating contractor, 27%; air conditioning engineer, 21%; electrical appliance dealer, 15%; relative or friend in business, 7%; builder, 3%; contact many types, shop around, 3%; national brand dealer, 3%; all others, 2%; don't know, 20%.

But "non-owning neighbors of owners," who, du Pont says, "may be expected to be better informed on air conditioning," answered: heating contractor, 12%; air conditioning engineer, 35%; electrical appliance dealer, 2%; relative or friends in business, 2%; builder, 2%; contact many types, shop around, 7%; national brand dealer, 16%; all others, 2%; don't know, 25%.

BUILDER EMPHASIS

In those homes where air conditioning was installed prior to occupancy, it was offered on an optional basis, 56% of the owners said. Where it was mandatory, however, air conditioning was stressed as a major selling feature by 65% of the builders, who emphasized such advantages as "general comfort, price features, coolness throughout house, healthier living conditions, clean air, good investment, humidity control," and other reasons.

"Where the house was automatically equipped with central air conditioning, the builders were doing a much better job of using it as a selling feature than in the cases where air conditioning was optional," du Pont notes.

"Nevertheless, over one third of the buyers claimed it was not stressed as a major feature, indicating considerable room for improvement in builder selling effort," the company stated.

Importance of room air conditioners as a stepping stone to central systems was substantiated in the survey, 38% of all central system owners having previously owned room units, it was determined.

"Considering the present national frequency of room air conditioners of some 5 to 6%, the fact that 38% of present central air conditioning owners once owned room units is important," du Pont comments.

"Room units would appear (Continued on next page)

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Du Pont Survey--

(Continued from preceding page)

to be a very excellent way to introduce the homeowner to the enjoyment of air conditioning and can serve to stimulate central air conditioning sales. Prize prospects for central air conditioning would seem to be those homes now having room units."

The survey also brought out the fact that "the bulk of central air conditioning systems now installed are tied in with the heating system in one way or another. This, as well as other findings, would indicate that owners like to think of their central air conditioning as offering 'all-year climate control,'" du Pont said.

This section condenses certain parts of the du Pont study which discuss and point out advantages found in central air conditioning by the survey, what it cost to buy and install a unit, methods of payment, improvements owners suggested concerning "on-the-job" engineering, what influence the unit had on family living habits, and what health conditions made people decide to purchase a residential air conditioner.

Builders Stressed Advantages Of Central Air Conditioning

Advantages stressed by builders for central air conditioning fairly well paralleled reasons given by owners for installing air conditioning where they had a choice.

The fact that in one third of the cases no advantages were pointed up "would indicate that many sales opportunities were being overlooked," researchers noted.

These were advantages builders stressed for central air conditioning:

General comfort	26%
Price features	19%
Coolness throughout house	13%
Healthier living conditions	12%
Clean air	9%
Good investment—resale value	7%
Humidity control	5%
Others	4%
No advantages stressed	33%

Many Cooling Installations Require Wiring Alterations

Approximately two thirds of the homes where air conditioning was installed after occupancy required some changes in the house, the survey found. Wiring changes were most frequent. If major changes are necessary it might point the way "to selling a new heating system" as well as air conditioning, researchers indicated.

Percentage of changes in the house in connection with the actual air conditioning installation include:

Installation of new circuits ..	37%
New ducts	29%
Changes to existing grilles or outlets	20%
Changes to existing ducts	14%
Structural wall, floor, or ceiling changes	8%
Other	2%
No changes	34%

Unit Price, Installation Cost, Method of Payment Outlined

Total cost of the air conditioning unit and installation varies widely with the majority of cases being under \$2,000, it was learned. The "very high amount" of cash buying parallels the picture established for room air conditioners, it was added.

It suggests opportunities of merchandising other methods of payment, particularly for an item in

the price range of a central air conditioning system.

Percentages for total cost of the central air conditioning unit and installation were:

Total cost under \$1,000	6%
\$1,000-\$1,499	29%
\$1,500-\$1,999	25%
\$2,000-\$2,499	13%
\$2,500-\$2,999	6%
\$3,000 and over	8%
Don't know	13%

How the installation was paid for is shown in the following percentages:

Cash	68%
Bank loan	9%
Time payments	7%
FHA loan	6%
Made part of mortgage	5%
Other	5%

Sizing and Installation Job Seen To Need 'Careful Study'

Among the few owners not entirely satisfied with their central units, the main reasons seem to stem from poor "on-the-job" engineering, researchers conclude. Insufficient capacity is the greatest

weakness, they say. This whole area of sizing and installation "would seem to warrant careful study" by everyone concerned with the sale of central air conditioning.

When owners were asked if they were completely satisfied with the results of central air conditioning they replied with a resounding 86% "yes" and 14% "no."

These were the reasons given by those not completely satisfied:

Poor general performance ..	20%
Poor installation job	16%
Part or all of house inadequately cooled	15%
Inadequate cooling on special occasions	13%
Cost of upkeep and installation	13%
Noise	12%
Lack of fresh air	11%
Doesn't eliminate dust or odors	10%
Others	18%

Noise Elimination Is Main Improvement Owners Suggest

Although satisfaction with the results of central air conditioning

was very high, researchers found, an "appreciable number" of owners did have improvements to suggest for their central air conditioning system. Main factor was less noise which was also the leading improvement suggested for room units in the 1955 Residential Room Air Conditioner Study.

Undoubtedly, the researchers explain, the owner does not differentiate between air noise and noise of the unit itself.

In the survey, 44% of the owners had improvements to suggest for central air conditioning. Many of the suggestions other than noise could be lumped together under the subject "better on-the-job engineering," the report said. This parallels the findings on reasons for not being completely satisfied.

Owners suggestions:	
Less noisy unit	24%
Better coil air distribution ..	16%
Improved installation practices	14%
Better automatic temperature control	12%
System not requiring water ..	10%
Lower cost of operation	8%
Better advice on capacity,	

bigger unit	6%
Easier to turn on and off, easier to change from heating to cooling	5%
Others	31%

Ways Central Conditioning Influence Family Living

Summer months living habits were summarized in the report. The fact that more members of the family are in the house more often and that there is "less family irritation—more relaxation" suggests to the researchers that there is a "very positive" correlation for air conditioning as it affects family life. These "beneficial influences" of air conditioning would all seem "to make good sales appeals."

Ways central air conditioning influenced the family living habits during summer months were:

Stay home more—family together more	41%
Spend more time in house, less in garden or on porch ..	21%
Less family irritation—more relaxation	19%

(Concluded on next page)

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Residential Cooling Survey --

(Concluded from preceding page)

More home entertaining....	12%
More eating at home—	
more hot meals	10%
Take fewer vacations	7%
More and better sleep.....	6%
Others	6%
No difference or change....	20%

Find Air Conditioning Has Favorable Effect on Health

Health conditions "have certainly" been an important factor in the purchase of central residential air conditioning, the study shows. This "would seem to indicate or suggest" effective appeals which the sellers of air conditioning equipment might employ.

In the survey 25% of the owners reported that health conditions had influenced their decision to own central air conditioning. And in 95% of the cases they reported that central air conditioning had a favorable effect on health.

Almost all respondents confirmed the "positive effect" of central

air conditioning on these health conditions. This confirmation should make "very strong merchandising material," it was said.

These were the health reasons mentioned:

Hay fever, allergies	50%
Respiratory conditions—	
asthma	22%
sinus trouble	10%
Heart condition—high	
blood pressure	9%
Heat fatigue—prostration..	6%
Acute illness	5%
Invalid in family	3%

Most Present Central Systems Installed In One-Floor Homes

The findings on the proportion of various types of systems installed should be helpful to manufacturers, researchers declare, so the producers can check how their own equipment-type sales compare with national average.

After all owners had reported what type of central air condi-

tioning system they used it was found that 37% had a twin unit, that is an add-on cooling unit adjoining the heating plant which shared blower and duct system. Combination units (heating and cooling units in one casing) were reported by 33% of the owners, 19% had a remote system with compressor installed outside the home with internal blowers and ductwork, and 11% had a separate air conditioner inside the house independent of the central heating unit.

The fact that better than half of the air conditioning units were installed in locations other than the basement ties in with the finding that the majority of present systems are installed in one floor homes, the report indicated. The many different locations show the versatility of central air conditioning systems now available.

Highest percentage of owners, with 43%, said their central system was installed in the basement, 18% in the garage, 15% in a closet, and 8% respectively in either a utility room, attic or attic crawl space, and other locations.

Some Contractors Try To Sell System to Neighbors

Dealers will be interested to learn that 93% of non-owners of central air conditioning units contacted by the survey emphasized they had never been approached for the purpose of selling them an air conditioning system, while 7% answered positively. The percentage dropped to 83% when inquiry was made of non-owning neighbors of owners, the report further pointed out.

Obviously, the report went on, if not the industry as a whole, at least individual contractors "have sensed the opportunity" associated with the neighbors of owners and "have done something about it."

However, only 17% of this market ever having been contacted leaves "much untapped territory," it was pointed out. The fact that less than one of 10 non-owners of air conditioning units, in the broad picture, has ever been contacted shows the magnitude "of the selling job remaining to be done."

Clinching evidence on the importance of the non-owning neigh-

bors of owners as the most ready market is shown by a comparison of their central air conditioner buying plans with those of non-owners broadly, the survey indicated.

Neighbors have "definite buying plans 3 to 1" over the average non-owner, the survey shows. If an average of three neighbors per present owner were assumed this would mean "a total of some 750,000 based on a present ownership of approximately 250,000 central air conditioning systems" in this country.

Percentage of total households covered having definite buying plans:

Non-owning neighbors of	
owners	5.8%
Non-owners generally	1.8%

Applying the 5.8% figure means, then, the report stated, a total of "over 40,000 neighbors" of owners as "an immediate market."

Find Some Important Ways To Improve Market Development

There are "undoubtedly many" things needed to further develop the central residential air conditioning market, researchers estimate. However, the conclusions which follow outline what appear to be some of the more important needs based on survey findings. Examples cited are "only a few" of the ones brought out in the study illustrating the need for more information and more education, it was noted.

More information is needed. . . . On installation costs 64% of non-owners had no idea concerning what an installation would cost.

Operating costs also found 64% of non-owners having no idea of such costs.

On ease of installation 33% of non-owners reported their house unsuitable for air conditioning.

More education is needed, researchers believe, to overcome misconceptions. Actually 32% of non-owners of central air conditioning units thought air conditioning had disadvantages, with its being unhealthy and causing colds as the leading reason given.

Need To Emphasize Central Air Conditioning Benefits

What is needed to develop the central air conditioning market?

The survey finds that importance of actual exposure to the benefits of central residential air conditioning "cannot be overemphasized." There is every indication that this is one of the "most effective aids" to selling. This might suggest some new selling and merchandising methods such as air conditioned model homes or some form of rental or trial system, the report said.

In stating that more exposure is needed for enjoyment of air conditioning, the survey reveals that:

62% of non-owners have never visited a home which has central air conditioning installed;

62% of owners had visited a home with central air conditioning before they purchased a unit;

38% of owners had previously owned a room air conditioner.

The high cash purchase of central air conditioning systems parallels the findings on methods of payment for room air conditioners, the survey shows. "Undoubtedly, greater use of credit would help expand the market," especially in the lower income brackets.

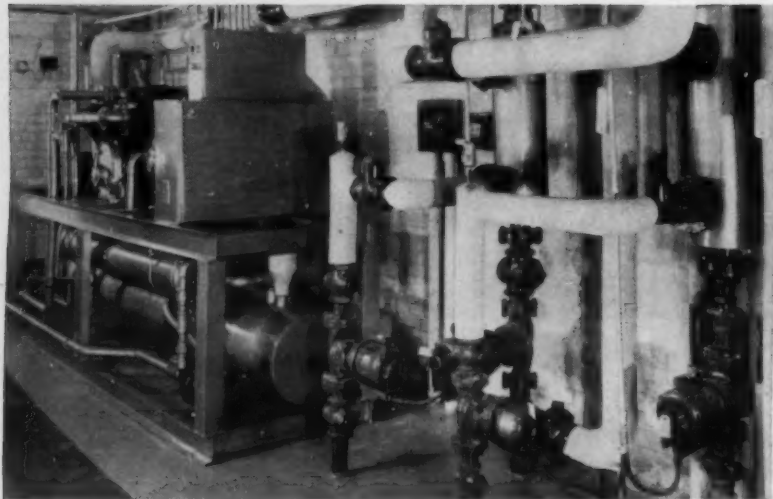
Re-Elect Officers

SAN DIEGO, Calif. — The Sheet Metal Contractors Association of San Diego announced re-election of its officers: Milton S. Jackson, president; Hugh Weckerly, vice president; and William F. Ehmcke, secretary-treasurer.

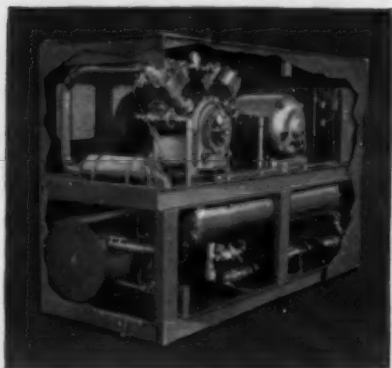
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At Cleveland Meeting

NWAHACA To Feature Latest Research In Air Treatment Functions Next May

CLEVELAND — Latest research developments in providing methods of controlling those factors of air conditioning other than temperature will be featured subjects of the Second Annual Technical Conference of the National Warm Air Heating & Air Conditioning Association. The conference is scheduled to be held on Wednesday and Thursday, May 1 and 2, in the Hotel Cleveland here.

"Our 1956 Technical Conference concentrated heavily on the heating and cooling phases of air conditioning," explains Frank Nunlist, Jr., chairman of the Technical Conference Committee of the Association. "We explored such subjects as atomic

power for heating and cooling—solar heating—the heat pump—and gas air conditioning.

"We feel that the next logical step in our conference program is to probe the other air treatment functions of the air conditioning systems to learn what new developments have emerged out of our industry's technology."

Nunlist is executive vice president of the Mueller Climate Control Div. of Worthington Corp.

The subject of air cleaning will be thoroughly covered by a three-man panel, made up of Dale O. Bender, Research Products Corp., who will discuss the use of viscous filters; Earl M. Evans, American Air Filter,

Inc., who will discuss the uses of charged-media air cleaners; and George F. Landgraf, Trion, Inc., who will discuss the application of electro-static cleaning.

Richard S. Dill, chief of the Heating & Air Conditioning Section of National Bureau of Standards, Washington, D. C., will act as discussion moderator.

"Noise Problems and Sound Control" and "Humidity Problems—Both Summer and Winter" are other subjects which will be thoroughly explored at this conference, as will the subjects of "Using Weather Data in Estimating Operating Costs," "Second-Story Cooling Problems in Two-Story Houses," and "Use of Forced Attic Ventilation to Reduce Heat Gains."

The Annual Technical Conference program has been established by the National Warm Air Heating & Air Conditioning Association to provide an industry forum.

U. S. Studies Ways To Improve Drawings and Specifications

WASHINGTON, D. C. — The same time serve as adequate contract documents. It was also reported that a Building Research Institute publication on "Windows and Glass in the Exterior of Buildings" is expected to be available in about two months. This book is the proceedings of an institute-conducted conference held last November. Several papers deal in detail with the problems of heating and cooling in modern buildings having more than the usual amounts of glass.

Anyone desiring to participate in this study may contribute any ideas, criticisms, or compliments, or other comments, by mailing them to Homer J. Smith, staff architect of the Building Research Advisory Board, it was pointed out.

It is hoped that this study will improve the quality of drawings and specifications by helping to make them simpler, shorter, clearer, easier to prepare and understand, and at the

same time serve as adequate contract documents.

It was also reported that a Building Research Institute publication on "Windows and Glass in the Exterior of Buildings" is expected to be available in about two months. This book is the proceedings of an institute-conducted conference held last November. Several papers deal in detail with the problems of heating and cooling in modern buildings having more than the usual amounts of glass.

Condition Hatchery

CHARLOTTESVILLE, Va. — An air conditioned hatchery, to cost about \$350,000, is being built northwest of here for Grassy Knoll Hatchery of Alexandria.

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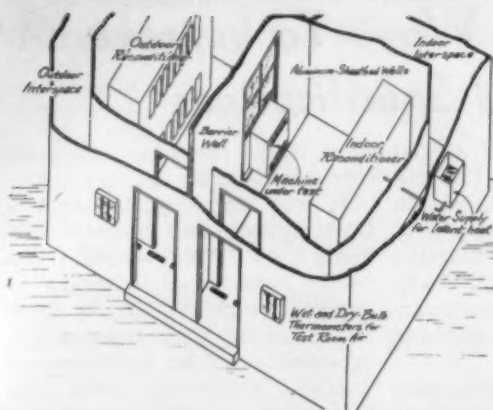
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- FLORIDA**—Eckles Distributors, 1707 Industrial Blvd., Jacksonville
J. D. Johnson Co., 16 W. Gregory, Pensacola
I. W. Phillips & Co., P. O. Box 400, Tampa
- GEORGIA**—Appliances, Inc., Box 1612, Atlanta
- ILLINOIS**—The Coleman Co., Inc., Peoria, Ill.
Robert Barclay, Inc., 1234 W. Fulton, Chicago
- INDIANA**—Great Northern Distr., Inc., 1117 Maumee, Fort Wayne
Central Supply Co., 210 S. Capitol, Indianapolis
Great Northern Distr., Inc., 209 College St., South Bend
- IOWA**—Midwest-Timmermann Co., 114-116 Western Ave., Davenport
Sidles Co., 8 Seventh St., Des Moines
- KANSAS**—Coleman Heating & Air Conditioning Co., P. O. Box 2060, Wichita
- KENTUCKY**—Valley Distr. Co., 912 Baxter, Louisville
- LOUISIANA**—Walther Bros. Co., Inc., 1722 Poydras at Willow St., New Orleans
- MAINE**—Nelson & Small, Inc., 68-78 Union, Portland
- MASSACHUSETTS**—Bigelow & Dowse Co., 2nd Ave. & A St., Needham Heights
- MICHIGAN**—Semmler Wholesale Supply Co., 5100 St. Jean, Detroit
- MINNESOTA**—Kelley-Haw-Thomson Co., 309-349 S. 5th Ave., W., Duluth
- MISSOURI**—Coleman Htg. & Air Cond. Co., 1219 Union Ave., Kansas City
Hollander & Co., Inc., 3900 W. Pine Blvd., St. Louis
General Wesco Distr. Co., P. O. Box 271, MPO, Springfield
- MONTANA**—Marshall-Wells Co., Box 2092, Billings
- NEBRASKA**—Sidles Co., 7302 Pacific St., Omaha
- NEW MEXICO**—Albuquerque Lumber Co., 501 N. First St., Albuquerque
- NEW YORK**—Roskin Bros., Inc., 1827 Broadway, Albany
Lee Distr. Co., 845 Washington St., Buffalo
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Roskin Bros., Inc., 115 Wisner, Middletown
Sey-Ber Distr. Co., Inc., 104 W. Division St., Syracuse
- NORTH CAROLINA**—Southern Appl., Inc., P. O. Box 2096, Charlotte
- NORTH DAKOTA**—Minot Coleman Distr., Box 969, Minot
- OHIO**—Miami Valley Dis., 8 N. Keowee St., Dayton
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Shuler Distr., 2114 Woodland Ave., Cleveland
Hughes-Peters, Inc., 111-17 E. Long, Columbus
The Joseph B. Smith Co., 1945 Franklin, Toledo
- OKLAHOMA**—Paul W. Davis Co., 825 N. W. 2nd, Oklahoma City
- OREGON**—Western Utilities Supply Co., 1905 N. Williams Ave., Portland
- PENNSYLVANIA**—The Coleman Co., Inc., 133-43 W. Hunting Park Ave., Philadelphia
L/H Appliance Wholesalers, 930 Manchester Ave., Pittsburgh
- RHODE ISLAND**—Lenz-Knight Co., Inc., 200 Conant St., Pawtucket
- SOUTH DAKOTA**—Leo C. Lippert Co., 506 S. Cliff Ave., Sioux Falls
- TENNESSEE**—Indoor Comfort Distr., 520 Van St., N. W., Knoxville
Forsyth-Williams, Inc., 34 N. Lauderdale, Memphis
- TEXAS**—Amarillo Hardware Co., 600 Grant St., Amarillo
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South Texas Appl. Corp., 641 S. Flores St., San Antonio
Warren Distr. Co., 205 Velasco St., Houston
- VIRGINIA**—R. F. Trant Distr. Corp., Box 300, Norfolk
- WASHINGTON**—Western Utilities Supply Co., P. O. Box 3524, Seattle
Hughes & Co., Inc., South 119-123 Howard St., Spokane
Marshall-Wells Co., 131 E. Main St., Spokane
- WEST VIRGINIA**—Van Zandt Supply Co., 1123 Fourth Ave., Huntington
- WISCONSIN**—Wisc. Heating Distr., 4715 N. 32nd St., Milwaukee



NEW test facility of Electrical Testing Laboratories, Inc. is a balanced-ambient calorimeter type designed to provide test data on operation, capacity, and performance of room air conditioners in accordance with ARI Standard 110-56.

New Balanced Ambient Calorimeter Test Facility Finds Room Unit B.t.u. Ratings

NEW YORK CITY—Electrical Testing Laboratories, Inc., 2 East End Ave. here announces opening of a new \$40,000 facility for the testing and evaluation of room air conditioners.

The new facility "is the first of its kind available to the industry and enables independent, authoritative determination of product ratings according to today's standards," according to the announcement.

ACCOMMODATES UNITS RATED TO 20,000 B.T.U.

"It accommodates units rated up to 20,000 B.t.u. and marks the most recent development in ETL's 23 years of service to manufacturers and dealers of air conditioners."

The new test facility is of the balanced-ambient calorimeter type and is designed to provide test data on the operation, capacity, and performance of room air conditioners in accordance with Standard 110-56 of the Air-Conditioning & Refrigeration Institute and the test procedures of Standard No. 16-56 of the American Society of Refrigerating Engineers.

"The facility comprises (see sketch) two adjacent vapor-tight rooms, one simulating an indoor room to be air conditioned and the other representing the outdoors," it was explained.

"When an air conditioner is to be tested, it is installed in the wall between the two rooms and measurements are taken of the amount of warm and humid air which must be introduced into the indoor room to hold the temperature conditions (wet and dry-bulb thermometers) at a given level.

"At the same time, measurements are taken of heat and moisture which a cooling reconditioner withdraws from the outdoor room to maintain this room at a given temperature and relative humidity. The air conditioner rating is based on these data.

HEAT INPUT SUM MUST MEET HEAT EXTRACTION

"The sum of the heat inputs to the indoor reconditioner and to the electric motors involved must agree with the heat extracted by the outdoor reconditioner within 6% or the test is not considered valid. In ETL tests these values, based on experience with a number of current models, agree to well within this limit.

"Each room is surrounded by an air space in which temperature conditions are kept at the same level as the respective test

rooms to virtually eliminate heat loss through the walls.

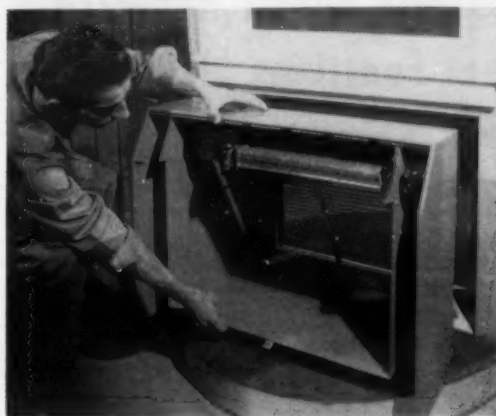
"The test rooms are also suitable for running ARI tests to simulate extreme climatic conditions and for making noise measurements.

MANSFIELD, Ohio—A flush-fitting, wall-mounted room air conditioner that contains a heat convactor which connects to steam or hot water pipes to provide heat in cool weather was introduced at the Home Builders Show by Westinghouse Electric Corp.

C. W. Paulson, manager of the Westinghouse room air conditioner department, explained that the same fan which circulates cool air in the summer also circulates warm air during the winter.

The air conditioner is only 31 in. wide. It was designed to fit under a window. Along its top front is a sloping control panel.

Only the sleeve or casing is placed in the wall, Paulson said. The removable mechanism then slides drawer-like into the casing. It fits flush on the outside



NEWEST addition to the Westinghouse room air conditioner line is a flush-fitting wall-mounted unit which uses a heat convactor to heat in cold weather. It can be seen here in the shell or casing of the 31-in. wide unit installed under a window.

wall and projects only 4 in. into the room. are units which need only 7½ amperes operating current.

The combination air conditioner utilizes the cooling mechanism of the 1957 Westinghouse "Streamliner" unit, which is offered in ¾ or 1-hp. capacities. For homes with only 15-ampere multiple circuits, there

Also available is a model which operates on 115 volts, eliminating the need for special 230-volt circuits. Where these high-voltage circuits already are installed, a 230-volt model is available.

Here's why Hotpoint relies



Fastening wire-tube condenser assemblies to condenser-compressor mounting brackets at Hotpoint Company. Serpentine tubing is delivered inspected and clean . . . all ready for final assembly operations.

BUNDYWELD IS DOUBLE-WALLED FROM A SINGLE STRIP



Bundyweld starts as a single strip of copper-coated steel. Then it's . . .



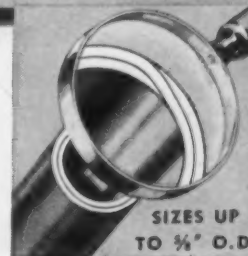
continuously rolled twice around laterally into a tube of uniform thickness, and



passed through a furnace. Copper coating fuses with steel. Result . . .



Bundyweld, double-walled and brazed through 360° of wall contact.



NOTE the exclusive Bundy-developed beveled edges, which afford a smoother joint, absence of bead, and less chance for any leakage.

SIZES UP TO ¾" O.D.

At Present Cost

Tomorrow's Freezer May Run Constantly on 1/6-HP. Motor, Preserve Food Vitamins Better at -20°

STATE COLLEGE, Pa.—The food freezer of tomorrow will most likely run constantly, preserve the original vitamin content of foods better at lower temperatures than today, and cost no more to operate.

Experiments with frozen food cabinets at The Pennsylvania State university have used frozen food cabinets equipped with 1/6-hp. refrigerating units instead of the usual 1/3-hp. motors.

These freezers operate constantly without thermostats. Operating costs were similar to standard food freezers on the market and there was less wear on the mechanism.

Minus 20° F., formerly

thought desirable but somewhat expensive, is possible at low cost with the continuously operating refrigerating unit, reports John E. Nicholas, agricultural engineer in charge of the tests. Minor changes were made in the cooling mechanisms to accommodate the smaller compressors.

"As temperatures reach -20° F. or lower, the original vitamin content of foods is better maintained," Nicholas points out. "Temperatures of -40° are easily obtained where the freezer is located in a cool room, or with more insulation than presently used," he adds.

"Freezer burn" can also be eliminated if the refrigerating unit operates all of the time, it

was reported. This "burn," it was said, occurs when frozen foods lose their moisture due to rising temperatures which occur before thermostats start the compressor in the present stop-and-go cycles. Moisture condenses on the coils as ice, another problem which can be solved.

Temperatures inside commercial frozen food cabinets vary from place to place inside the cabinets. These variations, often 5 to 10°, are reduced to small proportions with continuously operating refrigerating units, it was stated.

Freezers with continuously operating motors should need less repairs, Nicholas believes. Most wear and tear probably

Pennsylvania State U Researchers Experiment In Laboratory on Constant-Cycle Food Freezers



RECORDING locations of thermocouple cables before testing a food freezer is John E. Nicholas of Pennsylvania State university while Mark D. Shaw, instructor in agricultural engineering, helps.

occurs at the time of starting and stopping the refrigerating mechanism.

A complete report of the experiments is published as Progress Report No. 161 by the Agricultural Experiment Station at the Pennsylvania State university.

Kelvinator Offers Freezer Food Plan To Up Unit Sales

DETROIT — Kelvinator has announced a new "All-American Freezer Food Plan" aimed at boosting the company's home freezer sales. Announcement of the sales program was made by E. B. Barnes, general sales manager.

"National surveys have shown that more than half of all home freezer sales are made by retailers using food plan programs," Barnes said. "While food plans are not the only way to sell freezers, they are the most successful method so far developed."

Successful freezer sales represent highly-specialized selling because the home freezer business has a peculiarity that sets it apart from all other appliance selling, he indicated. "A substantial second purchase—large quantities of food—must be made by the homemaker before the freezer becomes useful," Barnes said.

The Kelvinator program provides a variety of sales tools including training films, advertising and sales promotional aids to assist dealers to secure leads, and a sales portfolio.

An important part of the program, the portfolio contains food consumption statistics to assist homemakers to determine family requirements, meat and frozen food charts, a graphic outline of the advantages of frozen foods over fresh and canned foods, charts describing various options of the food plan, and a code of ethics governing the operation of the program.

A detailed guide book for field personnel covers procedures for establishing the food plan at the local level, including selection of food sources; financing; recruitment, training, and payment of sales manager, salesmen, food counselors, and canvassers; presentation of food plan to retail outlets; profit and expense analysis.

Frozen Food Group To Meet In Minneapolis Sept. 15-18

ELIZABETHTOWN, Pa. — National convention of locker and freezer provisioners has been set for Sept. 15-18 at the Hotel Leamington in Minneapolis by the National Institute of Locker & Freezer Provisioners, it was announced.

Exhibit space is allocated according to the number of years companies have exhibited at the convention.

on Bundyweld Steel Tubing

Only Bundy offers these 4 advantages that insure product dependability and longer service life

1. Unique Tubing Construction—Bundyweld Steel Tubing, used in wire-tube condenser assemblies (shown at left), is double-walled from a single copper-plated strip and metallurgically bonded through 360 degrees of wall contact. Because of this unique process, the tubing is leakproof, has high bursting strength and vibration-fatigue resistance.

2. On-Time Delivery—Bundy's deliveries are timed to your production

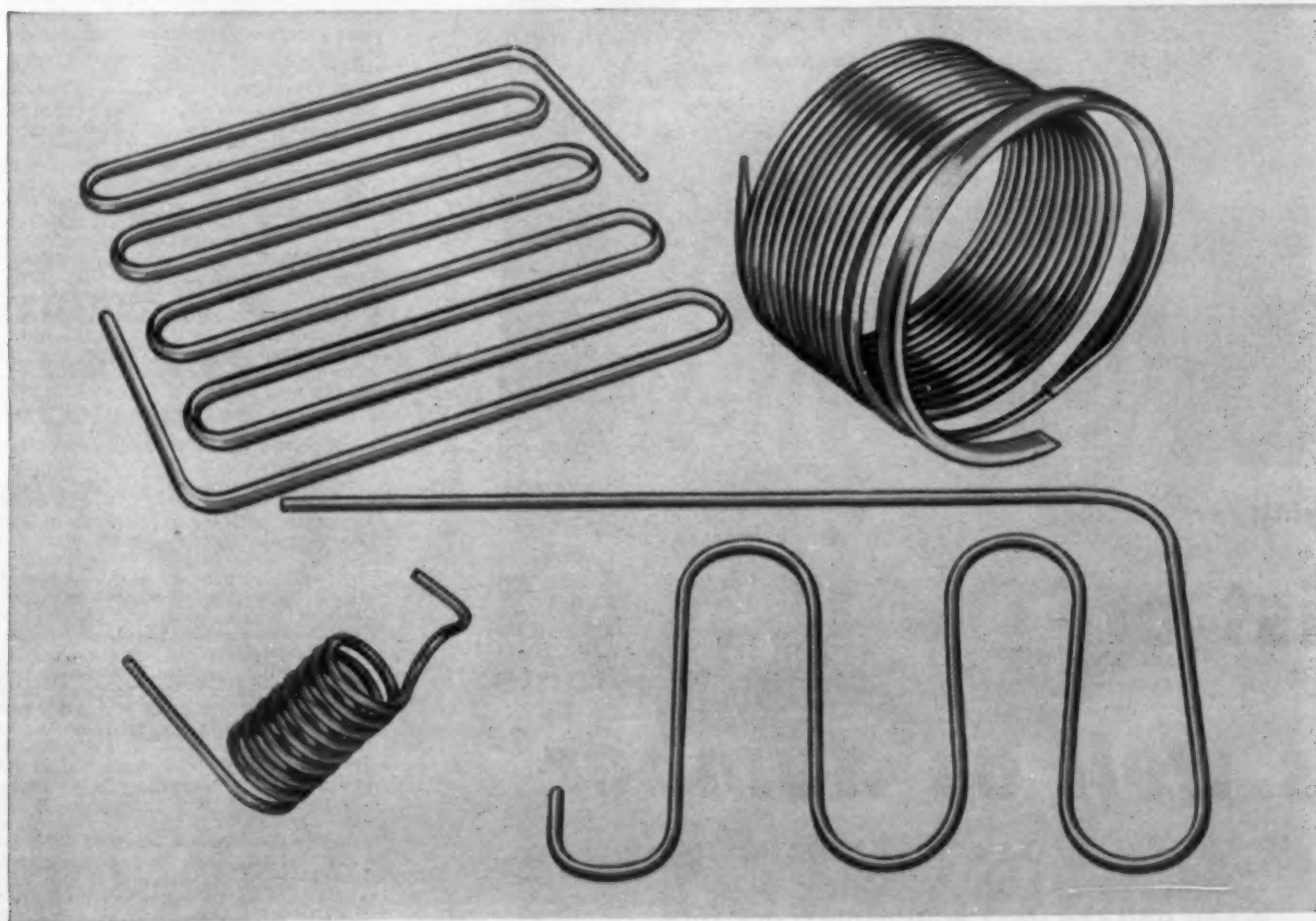
schedules—help you maintain close control . . . end costly production bottlenecks.

3. Expert Engineering Assistance—The staff of engineers at Bundy® has helped solve some of the toughest tubing problems in the refrigeration field. Their know-how and experience can help solve your tubing problems.

4. Modern Fabrication Facilities—Up-to-date fabrication facilities enable Bundy to make bends, coils, and complex shapes for any tubing requirement. Parts are made to your specifications at lowest possible cost.

Whatever your tubing problem—evaporators, compressors, condensers, or refrigerant lines—you, too, can benefit from Bundyweld Tubing and Bundy's services. For more detailed information, call, write, or wire us today!

BUNDY TUBING COMPANY
DETROIT 14, MICHIGAN



Serpentine bends and coils (above) show some of the many ways Bundyweld Tubing can be fabricated for use in refrigeration equipment.

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Bundy Tubing Distributors and Representatives: Cambridge 42, Mass.: Austin-Hastings Co., Inc., 226 Binney St. • Chattanooga 2, Tenn.: Peirson-Deakins Co., 823-824 Chattanooga Bank Bldg. • Chicago 32, Ill.: Lapham-Hickey Co., 3333 W. 47th Place • Elizabeth, New Jersey: A. B. Murray Co., Inc., Post Office Box 476 • Los Angeles 58, Calif.: Tubesales, 5400 Alcoa Ave. • Philadelphia 3, Penn.: Rutan & Co., 1717 Sansom St. • San Francisco 10, Calif.: Pacific Metals Co., Ltd., 3100 19th St. • Seattle 4, Wash.: Eagle Metals Co., 4755 First Ave., South • Toronto 5, Ontario, Canada: Alloy Metal Sales, Ltd., 181 Fleet St., E. • Bundyweld nickel and Monel tubing are sold by distributors of nickel and nickel alloys in principal cities.

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For more information about products advertised on this page use Information Center, page 42.

ASHAE Meets In Conrad Hilton--

(Concluded from Page 1)
tendancy in the history of the society.

Various special events for society members, their families, and guests have been planned by the ASHAE Illinois Chapter Committee on Arrangements, Peter J. Marschall, Chicago, chairman.

The report of the inspectors of election of society officers, council members, and the Committee on Research will be presented at the second session on Tuesday morning, February 26.

Introduction and installation of the 1957 officers will take place at the annual banquet on Wednesday evening in the grand ballroom of the Conrad Hilton.

Also at that time the Past President's Award will be presented to John W. James and

the society's coveted F. Paul Anderson Medal will be given to M. K. Fahnestock, Urbana, Ill., research professor of mechanical engineering and chairman of the Physical Environment Unit of the University of Illinois.

The banquet speaker is Dr. Preston A. Bradley, pastor of Peoples church, Chicago, and his subject is "Facing the Future."

On the opening day of the annual meeting there will be a Welcome Luncheon following the conclusion of the morning session. The luncheon speaker is Dr. Richard Heflebower, chairman, Economics Dept., Northwestern university, and his subject is "Revolutions in Our Times—What Our Lives Will Be Like in the Next Ten Years." After the luncheon, the society

officers will participate in the official opening of the show.

Technical-sessions papers and symposiums, in order of presentation, are as follows:

MONDAY

Monday, Feb. 25, 9:30 a.m.—"Study of Three Redwood Cooling Tower Packings," by Wesley W. Smith, associate research engineer, Texas Engineering Experiment Station, Texas A & M College System, is a report of several hundred tests of three types of redwood cooling tower packings. Purpose of the study was to obtain fundamental information on mass transfer and resistance to air flow in various cooling tower packings, and also to determine why some cooling tower manufacturers preferred certain packing types, as well as to indicate ways for improving packings.

"Earth as Heat Source and Sink for Heat Pumps," by D. M. Vestal, Jr., research engineer, and B. J. Fluker, assistant research engineer, both of Texas Engineering Experiment Station, Texas A & M College System, presents the results of an extensive investigation of the earth at shallow depths as a heat source and sink for the heat pump. The paper also contains a buried coil design equation derived from this study.

"From '36 to '56: Air Conditioning

Comes of Age," by Walter A. Grant, vice president, Central Engineering staff, Carrier Corp., is a history of 20 years' progress in air conditioning, pointing out the many advancements made in equipment and methods.

TUESDAY

Tuesday, Feb. 26, 9:30 a.m.—"Revised Winter Outside Design Temperatures," by H. C. S. Thom, U. S. Weather Bureau and presently chief climatologist, President's Advisory Committee on Weather Control, is a discussion in general terms of the problem of developing winter design temperatures. Simplifying assumptions are introduced which make possible the development of design values from available information. Climatological analysis is applied on this basis and this provides a range of design values offering the advantage of flexibility in application.

"Analysis of an Air Conditioning Thermal Circuit by an Electronic Differential Analyzer" is a paper which is the result of research carried on by ASHAE at its research laboratory in Cleveland. The authors are G. V. Parmelee, senior research supervisor, ASHAE Research Laboratory and now with the Arabian-American Oil Co., Dhahran, Saudi Arabia; P. Vance, Goodyear Aircraft Corp., Akron, Ohio and now at Massachusetts Institute of Technology, Lincoln Laboratory, Cambridge, Mass.; and A. N. Cerny, research mathematician, ASHAE Re-

search Laboratory. The test results obtained, it is believed by the authors and explained in this paper, demonstrate that the differential analyzer can be applied to solving practical problems of considerable complexity and give engineers results with satisfactory precision.

"Pulsations in Residential Heating Equipment" presents the preliminary results of research jointly sponsored by ASHAE, the AGA and OHI, conducted at the Battelle Memorial Institute as a part of the ASHAE research program. The authors are A. A. Putnam and W. R. Dennis, assistant division chief and principal physicist respectively at Battelle in Columbus, Ohio. Objectives included defining the fundamental nature of the pulsations and finding methods for their suppression or complete elimination.

"The Dust Spot Method for Evaluating Air Cleaners" is the result of research sponsored by ASHAE in cooperation with the Mechanical Engineering Dept., University of Minnesota. The study was conducted by K. T. Whitby, research associate; A. B. Algren, professor; and R. C. Jordan, professor and head; all of the Mechanical Engineering Dept., University of Minnesota.

Tuesday, Feb. 26, 9:30 a.m.—A symposium on dehumidification moderated by John Everetts, Jr., Philadelphia, will be conducted simultaneously with the aforementioned session. "Dehumidification by Refrigeration, Solid Sorbents, and Liquid Sorbents" will be discussed by Walter E. Ellis, W. L. Ross, and E. W. Gifford. "The Economics of Dehumidified Storage" will be presented by C. A. Higgs, and Prof. E. R. Queer will describe "Typical Dehumidification Problems and Their Solutions."

WEDNESDAY

Wednesday, Feb. 27, 9:30 a.m.—"Cold Wall Effects in a Ceiling-Panel-Heated Room," by L. F. Schutrum, supervising engineer, and T. C. Min, research engineer, both of the ASHAE Research Laboratory, concerns the combined effect of a cold wall or window and a heated ceiling panel on room-air temperature, mean radiant temperature, and air motion.

"Performance of Covered Hot Water Floor Panels, Part II—Room Conditions," by E. L. Sartain, head of Heating Experimental Laboratory, Modine Mfg. Co., and W. S. Harris, research professor of mechanical engineering, University of Illinois, is the second of a series concerning a panel heating investigation being conducted at the University of Illinois in cooperation with the Institute of Boiler & Radiator Manufacturers.

"Thermal Design of Warm Water Concrete Floor Panels" presents a simplified procedure for use in residences and commercial buildings. It complements the paper "Thermal Design of Warm Water Ceiling Panels" published in ASHAE Transactions Vol. 62, 1956.

Wednesday, Feb. 27, 9:30 a.m.—A symposium on industrial ventilation, moderated by Prof. C. H. Pesterfield, East Lansing, Mich., will also be held concurrently. Subjects included are "Control of the Industrial Environment," P. J. Marschall, Chicago; "Contaminant Control," K. E. Robinson, Detroit; "Cleaning Industrial Effluent," J. M. Kane, Louisville, Ky.; "Summer-Winter Comfort Ventilation for Industry," E. R. Small, Pittsburgh; and "Dust Particle Inertia and Various Consequences," W. C. L. Hemeon, Pittsburgh.

THURSDAY

Thursday, Feb. 28, 9:30 a.m.—"Outlet Characteristics That Affect Downthrow of Heated Air Jets" is a paper which is the result of research sponsored by ASHAE in cooperation with the Engineering Experiment Station of Kansas State college. It is prepared by Linn Helander, professor and head; S. M. Yen, associate professor; and Wilson Tripp, professor; all of the Mechanical Engineering Dept., Kansas State college.

"Air Flow in Free Convection Over Heated Bodies" is another paper which is the result of research sponsored by ASHAE—in this case, in cooperation with the Graduate School of Public Health, University of Pittsburgh, and prepared by T. F. Hatch, of their Dept. of Occupational Health and D. Barron-Oronzco, Direccion de Higiene Industrial, Mariano Escobedo #20, Mexico, D.F., and formerly with the Dept. of Occupational Health, University of Pittsburgh. The material in this paper may be used as a basis for determining exhaust ventilation requirements for hot processes.

"Radioactive Process Ventilation," by S. H. Glassmire and J. P. Wahlen, staff members at the University of California Los Alamos Scientific Laboratory, summarizes ventilation requirements for laboratories handling radioactive materials. This is the first information to the profession concerning what the Atomic Energy Commission is doing to solve this problem.

The next meeting of the society will be the semiannual meeting, June 24-26, at Murray Bay, Quebec, and the 64th annual meeting will be in Pittsburgh, Jan. 27-29, 1958.



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By Name as well as Number

. . . and you're sure of top performance—because Genetron refrigerants are super-dry!

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For more information about products advertised on this page use Information Center, page 42.

Study Shows

'Dry' Coil Units Give Equal or Better Performance In Cooling Beef Carcasses

LOS ANGELES—An exhaustive investigation of the cooling of hot beef carcasses which "revealed that 'dry' coil equipment will give equal or better performance than brine spray" is being offered in printed form through Refrigeration Engineering, Inc. here.

The study, titled "Hot Carcass Coolers . . . Brine Spray or 'Dry' Coil," was prepared by D. D. Wile, vice president and chief engineer, and H. A. Halls, national service manager, Refrigeration Engineering.

Presentation of the paper by Wile was featured at the recent Golden Anniversary Meeting of the American Meat Institute in Chicago.

One of the highlights of the speech pointed out that the shrinkage of carcasses is due mainly to the temperature difference between the coil and room; and adding moisture artificially, such as in a deep-water pan, will not reduce shrinkage. Also brine sprays at a temperature equal to "dry" coils will actually cause greater shrinkage than the dry coil, it was stated.

"Another important point illustrated in the study is that ceiling coils give proper air distribution by putting a blanket of cold air at the ceiling, which brings the rump of the beef in contact with the cold air first, and tends to cool the carcass evenly, reducing slime and sour bone," it was noted.

"The difference in maintenance and operating costs between brine and dry coils is also discussed in detail and it is revealed that the deterioration and up-keep of rails, switches, and hangers is excessive in a brine spray installation and

that the cost of brine is not a minor factor."

Reprints of the investigation, illustrated with photographs, graphs, and sketches are available through Refrigeration Engineering, Inc. of 7250 E. Slauson, Los Angeles.

Fully Self-Serve Store Conditioned Throughout

NEW ORLEANS—The new National Food Super Market which opened in the Wego Shopping Center in Westwego recently, is air conditioned throughout.

The market covers a total area of 12,000 sq. ft. It is completely self-service, including the departments handling refrigerated and frozen products.

Refrigeration Helps Dane Botanists Study, Grow Native Arctic Plants

COPENHAGEN, Denmark—Plants native to the Arctic regions are to be grown on an experimental basis in a specially constructed "coldhouse" in the botanical gardens here, according to the United Nations Educational, Scientific, and Cultural Organization.

will be maintained by refrigeration at a point just below freezing in winter and at a maximum of between 50 and 55° in summer, the organization further explained.

Danish scientists will study the plants as part of a long-range experimental program, it was added.

Temperature in the coldhouse

12 points of quality in ALCO "T" SERIES THERMO VALVES

1. Field proven supercharges for any application—all temperature ranges—all operating conditions.
2. Power element case and stainless steel diaphragm atomic hydrogen welded into one piece. Field tested for over 25 years.
3. External superheat adjustment. (Internal available).
4. External equalizer. (Internal available).
5. Simple cage assembly contains only one packed stem. Replaceable for quick servicing. Interchangeable for wide capacity range.
6. Tight seating—stainless steel stem and seat.
7. Outlet connections to match distributor requirements.
8. Easy to install, light weight flanges—in widest variety of body styles and connections.
9. Rugged come-apart constructions—corrosion-resistant materials.
10. Can be mounted in any position.
11. Simple, compact design—only three major parts—interchangeable to provide wide capacity and operation ranges.
12. Easy to inspect, clean and service without breaking line connections—no special wrenches or gauges required.

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The one complete line of refrigerant controls: Thermostatic Expansion Valves, Refrigerant Distributors, Solenoid Valves, Suction Line Regulators, Flooded Evaporator Controls and Reversing Valves.

Warehouse To Add 250,000 Cu. Ft. of Freezer Space

MEMPHIS—Mid-South Refrigeration Warehouse Co. has begun the construction of 250,000 cu. ft. of additional freezer space, adjacent to its present plant at 1100 East Parkway South.

According to William W. Goodman, president, the new freezer space also will be adjacent to the processing plant, already on the property, which is equipped to handle the processing of fruits and vegetables produced in this area.

"The increased freezer space is being made available to keep in step with the expanding production by growers of fruits and vegetables on acreage displaced by shrinking cotton allotments," Goodman said.

In addition to the Mid-South company expansion, Goodman pointed out, "Memphis Cold Storage Warehouse Co., under the same manager, has just completed converting two million cubic feet of 32° cooler space into freezer space to take care of the increased use of frozen foods in the territory that have to be kept at around zero temperature."

The Difference Between Gross Profit and Mark-Up on Cost

Expert Believes Air Conditioning Contractor Must Take Higher Sales Mark-Up Where Extensive Labor for Installation, Service Is Involved

MIAMI, Fla.—“I’ve found in the past few years that there is a significant difference between the total overhead costs of a company with a large percentage of labor to sell and a company whose sales require little labor,” R. S. Lafferty, secretary-treasurer of Hill-York Corp. here, declared recently.

“As a result, I am now convinced that an air conditioning contractor must take a higher mark-up on sales where extensive labor for installation and service are involved than on sales requiring little labor or service,” he said.

The air conditioning and refrigeration contracting executive spoke out of a long term lively interest in the mechanics of making a profit.

Four years ago he addressed an industry-wide business administration conference on how to make a profit. His talk, printed in the News shortly thereafter, caught the attention of readers and has brought a continuing flow of requests for copies.

No-Profit Firm 'Like Sore, Boil'

At that time Lafferty declared that a company that does not make a profit is like a sore or boil on our economy and should not continue. He asserted that a “new profit is the only excuse for an individual or company to be in business.”

“A profit,” he said, “is a sum of money over and above the proprietor’s ability to earn with others. It must be sufficiently large to justify the money invested, the risk involved, and the employment of others.”

“If any business does not operate at a profit, its employees cannot benefit by opportunities in the future, it cannot expand, it cannot employ more personnel, and it prevents other companies from making a profit who will in a good businesslike manner be worth their part in our national economy and in our industry.”

Difference Explained

An important step in understanding how to make a profit, he noted, is to distinguish between gross profit and mark-up on cost. He demonstrated the difference with this table:

RELATIONSHIP BETWEEN GROSS PROFIT AND MARK-UP	
Gross Profit % of Sales	Mark-up % of Cost
1.0	1.0
10.0	11.1
20.0	25.0
30.0	42.9
33.3	50.0
40.0	66.7
50.0	100.0

“You can see by the above table,” he said, “that 11.1%

mark-up on cost is only 10% gross profit, whereas 50% mark-up on cost is only 33⅓% margin on the sales dollar; and 100% mark-up is 50% profit on the sale.”

Thus, he explained, a company that does \$100,000 a year volume and figures its gross profit to be \$20,000 will have a gross profit of 20% of sales. However, the proprietor cannot say, “To make 20% gross profit, I must mark up my costs 20%.” Actually, he must mark up his cost (in this case \$80,000) by 25% to get his \$20,000 gross profit (\$80,000 × .25 equals \$20,000).

“Now,” Lafferty declared, “all that it takes to make a profit is to have a higher margin of pro-

fit on the sale than your expenses are in proportion to the sale. You can make more profit by raising the mark up and lowering expenses. It is as simple as that.”

'More Labor Means More Overhead'

Since making these statements, Lafferty has studied the business records of his own and hundreds of other companies. In that study, he has observed that the higher percentage of labor involved in the sales of any company, the higher the overhead of that company.

He has found that companies dealing only in service need to double their labor rate in order to cover their overhead expenses

and make a profit. In other words, they have to mark up their costs 100%. Thus a firm with a \$15,000 labor cost needs to mark up \$15,000 on that labor to cover expenses and make a profit.

On the other hand, a firm dealing entirely with items such as room air conditioners that can be sold “over the counter” or installed with very little labor cost could make a profit with a mark-up of only 10 to 20%, provided there was a rapid turnover of the invested dollar.

'Can Sell Room Units At Low Mark-Up'

“Room air conditioners can be sold at a low mark up,” Lafferty explained, “where there are no supervisory salaries to pay, no permit fees, and fewer trucks and less service equipment involved.”

In the middle are the engineering type firms where both labor and equipment costs are

more evenly divided. There, a mark up of 33⅓% to 50% may be needed to produce a profit.

This mark-up could be broken down further to fit the firm’s actual experience in the field. An engineering firm’s budget might show equipment sales marked up 20%, sub-contracts 15%, engineering 50%, installation materials and labor 50%, and warranty 15%.

A company spanning two or all of these fields, then, should not think in terms of a single percentage mark-up, Lafferty warned. By applying a 33⅓% mark-up across the board, it may charge too much for room unit sales and not enough for labor contract sales.

On the other hand, by separating its labor and equipment operations and determining the mark-up needed for each, it can make an over-all profit though the percentage mark-up on some

(Concluded on next page)

Marley '57 Cooling

Marley water cooling towers have an unprecedented record of high-fidelity service. It's a record built by countless thousands of installations and 35 years of engineering leadership. It's a record certified by contractors and owners for lowest final cost based on investment, long service life and low service cost. And behind the record is Marley's willingness to back every product throughout those 35 years.

Small wonder that year after year far more contractors purchase Marley cooling towers for air conditioning and refrigeration than towers of any other make. This year's Marley line is more complete than ever before — and as always, the accent is on reliability, and highest product fidelity in every respect.

LOOK AT THIS RECORD . . . look at it carefully . . . and you, too, will buy Marley . . . and add to your own record for customer satisfaction.

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Gross Profit, Mark-Up on Cost--

(Concluded from preceding page) items may be low.

He strongly recommends that the manager of any business make up an advance sales budget for each year by class of product, contract, or service sold, showing the minimum mark-up required for each class to make a profit.

3 Categories of Overhead Expenses

Lafferty advises the manager to budget his expenses in two different ways, both for his own analysis and to assure a profitable operation. The first method is to budget expenses as a percentage of the sales dollar. The second is to budget them as a percentage of gross profit.

Lafferty divides overhead expenses that must be covered by the gross profit into three cate-

gories: general and administrative expenses; selling and advertising expenses; and warehouse, shop, and service expenses.

When budgeted as a percentage of sales, their dollar total should add up to 3 to 5% less than the total gross profit decided upon. Budgeted as a percentage of gross profit, they should represent no more than 80 to 85% of total gross profit, leaving 15 to 20% of the gross as a net profit before taxes.

"If the manager would do this," Lafferty declared, "he wouldn't be ashamed to supply his figures to an industry association information pool so that we could get a composite picture. With such pooled information we could see volume changes in various classes of service. A basis of comparison could be developed that would

be very helpful to the industry as a whole."

High Overhead 'Not Bad'

Lafferty also commented that his study of company budgets indicates that high overhead is not necessarily a bad thing.

"Some companies with higher overhead," he said, "are making more profit than those with low overhead. This would indicate to me that low overhead does not necessarily mean a better profit or any profit at all."

"A company with a higher overhead may actually be running more efficiently so that the proprietor can afford to pay himself more money."

For, as Lafferty points out, the amount of money the owner takes out of the business as personal compensation is also overhead. It should be figured as such. The risks he takes and the capital he invests also deserve a profit, Lafferty asserts.

Senate Unit OKs Plan To Brunner Appoints Up Business Loans Limit Connors, Runciman

WASHINGTON, D. C. — A Senate Banking subcommittee unanimously approved the Small Business Administration's request to boost the limit on its outstanding business loans to \$215 million from the present \$150 million.

This action would authorize SBA to make more loans to little companies but does not provide the money to do so.

Senate action followed a warning by SBA chief Wendell Barnes that with the current high rate of loan approvals, the agency's authority to lend money is expected to run out by early February.

He indicated he may ask for another boost in the loan limit later on.

SBA is scheduled to expire this June 30.

UTICA, N. Y. — Wallace J. Hoeing, sales manager, Brunner Mfg. Co., has announced the appointment of Joseph R. Connors as district sales manager for the Philadelphia territory.



W. Runciman



J. R. Connors

Connors has been service manager in Utica. He succeeds Frank Wilson, who is retiring after 20 years with Brunner, the last 15 years as Philadelphia district sales manager.

Walter A. Runciman has been named service manager to succeed Connors.

As district sales manager, Connors will supervise sales of Brunner's line of open and semi-hermetic condensers for the air conditioning and refrigeration industries, as well as air compressors for commercial and industrial use. He will cover eastern Pennsylvania, southern New Jersey, and northern Delaware.

Formerly sales representative in Dallas, Runciman has a wide background of field sales and service experience with Brunner equipment.

Philippine Hospital, AF Base Install Refrigeration Units

WEST HARTFORD, Conn. — A hospital and an air force base have installed Dunham-Bush, Inc. refrigeration equipment half way around the world in the Philippine Islands, the company learned.

According to the Ed. M. Sison Co. of Manila, installer, all refrigeration systems in the large, modern 722-bed Veterans Memorial hospital in Quezon City, Luzon are equipped with Dunham-Bush ceiling mounted standard unit coolers, evaporative condensers, and receivers.

In addition, Sison put in a ceiling mounted unit cooler in the cold storage plant of the U. S. Air Force John Hay camp in Baguio City, P. I. Constructed with aluminum cores, the unit cooler is circulated for direct expansion operation.

To Cool Army Chapel

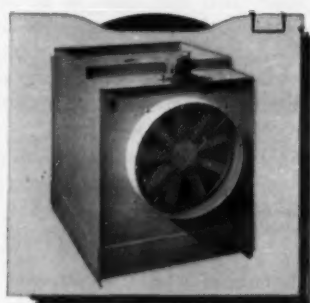
MOBILE, Ala. — Army Engineers here announced the letting of a \$291,449 contract to Dethlefs & Hannon, Anniston, Ala., for construction of a chapel and post engineer storehouse at Fort McClellan, Ala. The air conditioned chapel will have a seating capacity of 300.



Mounts Minerallac hangers No. 6 to No. 6 on I-Beams without necessity of drilling holes. Have 14-20 tapped holes. Fits beam flanges up to 1/2" thick. Low cost. Send for literature.

MINERALLAC ELECTRIC COMPANY
25 N. PEORIA ST. • CHICAGO 7, ILL.

Towers are "Hi-Fi"



AQUATOWERS®

Long recognized as the pace setter in the packaged cooling tower field, Aquatowers are the overwhelming first choice of architects, engineers, contractors and users. Available in a complete range of sizes (12 models) rated from two tons nominal up, they are guaranteed to deliver economical, positive cooling with a minimum of maintenance. Casings are of heavy gauge steel with MarClad finish that guards against corrosion, abrasion and moisture penetration.



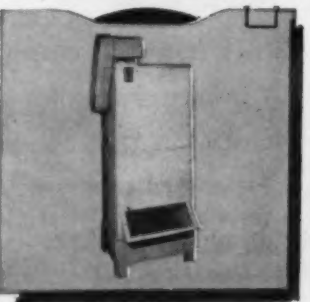
SPRATOWERS®

Marley produces a complete line of natural draft Spratowers ideally suited for air conditioning and refrigeration application where lowest cost per gallon of water circulated is a requirement. They are prefabricated and piece-marked for easy installation. Marley's super-spray system achieves greater water break-up and longer air-water contact. Available in all air conditioning and refrigeration sizes.



WOOD AQUATOWERS®

Incorporating many of the features of the popular steel Aquatowers, Marley's line of wood Aquatowers is especially applicable in areas with highly corrosive atmosphere. Larger models ship disassembled, are easily hoisted and erected. Wood Aquatowers are available in five models.



AQUACOOLES®

Designed for indoor or outdoor installation, this complete line of Marley towers is available in a wide range of sizes from three tons up. Highlight features are the centrifugal blower that assures whisper-quiet operation, non-clog nozzle water distribution and ample nailless wood filling for maximum water break-up and longer air-water contact. AquaCooler discharge air may be simply and successfully vented to exterior.

Call your Marley distributor for information and prompt delivery of these "hi-fi" performers!

The Marley Company

Kansas City, Missouri

Inside Dope

By GEORGE
F. TAUBENECK

(Concluded from Page 1, Col. 1)

And Dodge reports more orders for air conditioned cars in January than were received in all of 1956.

Women who've experienced automotive air conditioning are sold on it even more than power steering. You see, they can close the windows and keep every hair in place. Otherwise a hair-dresser's work doesn't last long in summertime.

Another prediction:

Purchasers of certain 1958 model automobiles literally will ride on air. An air suspension system—not unlike the type employed by Greyhound buses—will replace conventional springs.

Trial-run orders for the air compressors required already

have gone out to refrigeration compressor manufacturers—and tubing fabricators, also.

Sea Water Idea

Lack of water handicaps the growth of air conditioning, and a lot of other developments. It's one of America's knottiest problems.

Best answer, of course, would be an efficient, low-cost method of desalting sea water.

Here's a thought: the gills of ocean fish desalt and drink ocean H₂O, and effectively, and turn it into fresh water. Perhaps if the chemical and physical composition of those gills were studied we could find a helpful clue to our big problem.

Cooperative Advertising: Bad Deal

We have no quarrel with cooperative advertising as such (local newspaper ad costs

shared with dealers) but mounting abuses of the system by large stores have brought many large manufacturers to the boiling point.

Giant retailers in New York and elsewhere are making money on their advertising by charging fantastic prices for catalog pages, by demanding 100% payment for "cooperative" space, and in a known instance, demanding a \$300 advertising allowance in return for a \$75 sample order (future business depending on the success of the "promotion").

You'll note that General Motors, Chrysler, and Ford have thrown cooperative automobile advertising out the window.

Too Late Schmart

From the J. D. Lewis book, "Dealer's Choice," we learn the following about poker:

You have one chance in a deal and a quarter to get one pair; one in 20 to get two pairs; one in 46 to get three of a kind; one in 254 to get a straight; one in 508 to draw an ordinary flush; one in 693 for a full-house; one in 4,164 for four of a kind; one in 64,973 for a straight flush, and one in 649,740 for a royal flush.

Man! If we'd known about those odds 30 years ago "Dope" would have:

- (1) Never taken up the game;
- (2) Saved a lot of money;
- (3) Missed great fun and companionship.

Sometimes it pays to be ignorant.

Sporting Note

Eddie Taylor (who grew up in the refrigeration business—now is with Motorola in Chicago) apparently is trying to sew up the Cleveland market. Also sports fans everywhere.

He has engaged the services of Bob Feller, famed baseball pitcher, to team up with Otto Graham, all-time great quarterback, as Consultants on Youth Activities.

Feller and Graham will spearhead and direct nationwide promotional and goodwill programs for "little" football and baseball leagues.

"These two men," Taylor declares, "exemplify the very best in wholesome competitive sports. They are fine examples for youngsters. We want to make it possible for millions of boys and girls and their parents to meet and talk with them."

Bob Feller (nicknamed Rapid

Robert because of his fantastic speed in pitching, said to be nearly 200 miles an hour) went into major league baseball from an Iowa farm at 17. He had no minor league experience. During 20 years as a player with the Cleveland Indians he pitched three no-hit games, 12 one-hit games, and compiled an over-all record of 266 wins against 158 losses.

He holds records for the most strike-outs in a single game, the most consecutive strike-outs and in three seasons, the largest number of complete games and shut-outs. In 1940 and again in 1951 he was voted the top major league pitcher.

Otto Graham, All-American selection in both football and basketball at Northwestern, and for 10 years a stellar quarterback for the Cleveland Browns, compiled an equally amazing record. Famed for accuracy and a "soft" pass, he threw 2,626 passes and completed 1,464, with 174 of them going for touchdowns, during his professional years.

As a pro he never played on a team that did not either top its division or win a championship. He was named Most Valuable Player in the All-American Conference in 1947 and 1948 and in 1955 he was Pro Athlete of the Year.

Eddie, bring 'em over. We'd like to meet them.

Add Advertising Notes

Frozen foods slogan: "Best Meals You Ever Thaw."

Taps for Col. Jarrow

It is always said to make note of the passing of old friends, particularly when they were among those of the "old bunch" with whom we started in the industry, yet we feel there is a need to pay special tribute to a man who was an outstanding citizen—of both his industry and his country.

Such a man was Col. Harry W. Jarrow, chairman of the board of Jarrow Products, Inc., who passed away late last year at the age of 73. Early recognizing the vast future of the refrigeration industry, he formed the Jarrow Co. in 1927, to specialize in refrigerator door gaskets. The company still is a leader in this field, and has branched into other products for our industry. A pioneer member of the Refrigeration Equipment Manufacturers Association (REMA), he took an active interest in industry affairs.

Col. Jarrow served his country in both World Wars. He was a member of the Ordnance Advisory Board in World War II, and in the postwar period served as chairman of the Pan American Arms Conference, and on special diplomatic missions.

Another facet to Col. Jarrow's full life—and one that is of importance to this industry—is the fact that he trained and encouraged his two sons to carry on the business which he founded. Sons Stanley, president, and Myles, vice president, have been running the Jarrow show for several years.

FREEZ-KING
...the leader

new!
portion-control
automatic
mix feed

2 COMPRESSORS

2 TIMES THE PROFITS

TWICE AS EASY TO OPERATE

FREEZ-KING
COUNTER MODEL
SHAKE MACHINE

new!
Model 850
For counter or
back-bar

Largest capacity of any
counter shake machine...
more than 200 shakes per
hour.

No. 800
Shake machine
Drive-in
capacity.

No. 925
Soft-serve.
Slim, trim
space saver.
Companion to
975.

No. 875 Counter model
soft-serve. Companion to 850

Excludes territories available to master distributors and dealers

Write: **FREEZ-KING CORPORATION**
2510 W. Madison, Dept. 30 Chicago 16, Ill.

Handy Tube Bender

Smoothly Bends any pipe or
Tubing $\frac{3}{8}$ "-1 $\frac{1}{8}$ " O.D.

• Just a twist of the
wrist assures perfect,
even bends — right
angle, any angle, U
and offset. Save
enough on ONE job
to pay for your
HANDY BENDER.

See your
supply
house—or
write for
free folder
today.

HOLSCLOW BROS., INC.
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HAVE YOU FABRICATING PROBLEMS?

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KMP

FABRICATORS OF COPPER
TUBING... BENDING...
SPINNING AND FORMING.
PRECISION FABRICATING
IN VOLUME TO MEET
YOUR REQUIREMENTS.

WANT FINER DRYERS...
STRAINERS...
CAPILLARY ASSEMBLIES
... ACCUMULATORS?

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MOISTURE MAGNETS
ARE BETTER!
COST LESS!

KMP

MOISTURE MAGNETS

The original equipment
dryer used by 75% of
the world's leading
refrigeration and
air conditioning
manufacturers

WE INVITE YOUR INQUIRIES.
U. S. Patents RE. 22,465 and 2,430,692

KMP KENMORE MACHINE PRODUCTS, INC.
LYONS, NEW YORK

Dryers • Accumulators • Accumulator Dryers • Strainers • Capillary Assemblies

Preview

Heating, Air Conditioning Show To Draw Many New Product Exhibits to Chicago's Amphitheater

Tecumseh

Its complete line of compressors for year-round central system air conditioning applications, 1 hp. through 5 hp. will be featured in the Tecumseh Products Co. booth 1114, which will also have some new demonstration models.

Among the features in the compressor line that will have a public showing for the first time is the "Rotolok" detachable valve, to permit more flexible assembly of the complete air conditioning system.

Demonstration devices will include a plastic operating model of the 7½-amp. ¼-hp. compressor, and a dummy shell of the 12-amp. 1-hp. compressor.

Redmond

Redmond Co. will display its complete line of "Tri-Flux" shaded pole and permanent split capacitor motors AY and CY.

Two new motors, designated AL-4 and AM-4, will be spotlighted this year, introducing the Tri-Flux design in a small diameter motor. AM-4 was developed specifically for the air conditioning and refrigeration industries, and it, like the AL-4, is adaptable for heating, ventilating, and other industries, it was explained.

Sturtevant

Sturtevant Div. of Westinghouse Electric Corp. announced that "radical new improvements" in its line of "Precipitron" electronic air cleaners will be featured in its booth.

Significant reductions in first cost, space requirements, and installation cost will be in evidence, it was stated.

Redesigning of working elements allows velocities up to 600 f.p.m. in the units, the firm said.

American Air Filter

American Air Filter Co., Inc. will highlight its new "Roll-O-Vent" heating and ventilating unit in booths 38 and 40.

Also featured in AAF's exhibit will be the "Roll-O-Mat" and "Multi-Pak" air filters, the company announced.

Marlo Coil

Marlo Coil Co. will feature new air conditioning and heat transfer products in its exhibit at the show.

New equipment on display in booth 1207 will be an air-cooled condenser for heat pump applications, fin coil evaporators for reverse cycle applications, and new model floor and ceiling-type air conditioning units. Other products will include evaporator coils, spray type dehumidifier, auditorium type heating and ventilating units, and "Seazonaire" room air conditioning units of the remote type.

York

York Corp., subsidiary of Borg-Warner Corp., will show a completely new line of air conditioning equipment for multi-story buildings as well as residential dwellings in booth 32, the company announced.

Included in York's display will be a "Turbomatic" compressor, six new models of "CT" high-velocity conditioners, four new designs of "CF" fan window air conditioners, six new residential conditioners, and a full line of "Snorkel" air conditioners, it was noted.

One of the new "Yorkaire" conditioners will feature radiant heating and cooling. This was designed for multi-space, multi-story buildings, it was added.

Stoddard Industries

Photomicrographs of dust formations on air filters will be exhibited for the first time by Stoddard Industries, Inc. in space 237.

High-powered microscopes show the characteristic tree-shaped formations of dust collected by the electrostatic attraction of Stoddard's "Dust-Magnet" filter.

Mitchell

Max-Cool" prefabricated duct kits for air conditioning installations will be spotlighted in Mitchell Mfg. Co., Div. of Cory Corp.'s booth 754, the firm announced.

Max-Cool duct kits are made in two sizes, it was explained: "DK-4" is a four-outlet installation and

"DK-6" kit has six outlets.

In addition, Mitchell's new 2, 3, and 5-hp. blower coil units for residential air conditioning will be shown, along with a new 5-hp. air-cooled residential air conditioner, and new pre-wired 4-hp. central air conditioner.

Governair

Motif for its display and also key to Governair Corp.'s future promotion is a new "word"—"Satisfabricated," the company announced.

Satisfabricated packaged air conditioning units will meet, so Governair claims, capacity and particular dimensions of architects and engineers "pet projects."

Center of the firm's display will be a 7½-ton self-contained multi-zone unit complete with evaporative condenser in one package, it was added. Also in booths N306 and N405 will be shown a new air-cooled condenser.

Stewart-Warner

Stewart-Warner Corp., U. S. Machine Div., Heating & Air Con-

PREVIEW

On this and other pages throughout this issue the NEWS presents a "preview" of the exhibits scheduled for the 13th International Heating & Air Conditioning Exposition to be held Feb. 25 to March 1 at the International Amphitheater in Chicago.

This information will be valuable not only to those attending the Show, but to those who may not have an opportunity to attend, in that it will provide some idea of the air conditioning industry products available this year.

ditioning Div., will display in booths 1150 and 1251 a complete line of domestic heating and air conditioning equipment, the firm announced.

New "Wiz" and "MB" furnace lines will lead the display, it was added. These are specifically directed toward the small home and tract building market.

In addition, a new line of remote air conditioning equipment, along with the present units, will be exhibited. Also featured will be a new packaged water-cooled air conditioning unit adaptable for commercial use, the company reported.

Barnebey-Cheney

Barnebey-Cheney Co. promises "one of the most graphic demonstrations of practical air purification ever shown," in booth 1046.

Specializing in activated charcoal purification and recovery equipment, the firm will show "FilterFolds," heavy-duty air purifiers for central system ductwork, "Dacor" filters which are disposable activated charcoal odor removers for window or packaged air conditioners, and several self-contained circulator units for various sizes and types, the company noted.

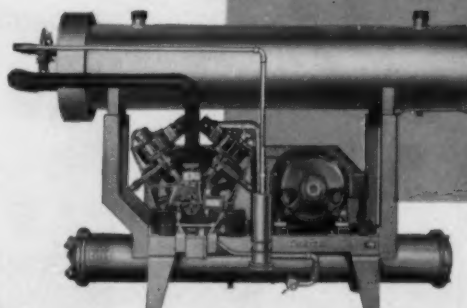
NOW!

Curtis

PACKAGED UNITS
Up to 50 Tons
OPENS
NEW MARKETS FOR
PACKAGED
AIR CONDITIONING

No question about it. The new 50-ton Curtis packaged air conditioner will open a new sales front for you. Architects, engineers and owners prefer packaged units for important reasons:

- Big package units are line assembled—does away with expense of field labor. Assures a **BALANCED SYSTEM**.
- Packaged units are easier to install—take up less space.
- Cuts down installation problems and maintenance costs.



up to 100 tons—

With all controls in single panel box for easier access and greater protection! Four step capacity control—unloaded starting available. Particularly desirable where year 'round conditioning of multiple individual rooms is required.

REMEMBER, every Curtis unit is backed by a solid 103 years of experience and skill. Curtis offers a

complete line of air conditioning equipment—nationally advertised to help you sell.

CAN COUNT ON
REMEMBER...

Curtis

OUR 103rd YEAR



New Curtis Packaged, Air Cooled, Air Conditioning Units, 3 thru 7½ tons. Residential and commercial applications.



Condensing Units up to 100 tons. F-12 or F-22.



Air Handling Units, Cooling Towers and Evaporative Condensers to match.

MANUFACTURING COMPANY
REFRIGERATION DIVISION

1912 Kienlen Ave. St. Louis 20, Mo.

CM-16

See these new Curtis units at the International Heating and Air Conditioning Exposition, Amphitheatre, Chicago, February 25 to March 1. Booth numbers 748, 750, 849 and 851.

Preview

Year-Round Residential, Commercial Air Conditioning Units To Be Pushed

Penn Controls

A new year-round air conditioning thermostat, a new heating thermostat, and cooling thermostat will spotlight the Penn Controls, Inc. display in booth 1025, it was disclosed.

Also to be shown for the first time will be new deluxe warm air and hot water controls and a new line of special application warm air controls.

Penn's new series 680 oil burner primary controls will be shown for the first time in the midwest, the company said. Rounding out the exhibit will be a variety of the firm's heating and air conditioning controls.

Perfection Industries

Perfection Industries Div. of Hupp Corp. has planned an "unusual display" in booths 1149 and 1151 which will spotlight the "Regulaire," comfort-control system. Demonstrations will be made continuously.

Other products to be shown include the 1957 "Tuckaway," a self-contained, air-cooled central air conditioner, the new line of commercial and residential air conditioners from 2 to 40 tons capacity, the "Super 30" and "Silhouette 17" window air conditioners, and new lines of gas and oil furnaces with summer cooling accessories, gas and electric water heaters, horizontal oil furnace, gas and oil appliances, and a cut-away model of the firm's counter-flow furnace.

Furnas Electric

Furnas Electric Co. will show for the first time an ampere rated control built in four sizes—20, 30, 35, and 50 amps in booth 231.

Features of the control include silver cadmium oxide contacts for longer life; magnets requiring less watts, reducing transformer sizes, and thermostat contact load; and each pole carrying full current which means poles are not connected in parallel, the company said.

Other displays will be "in-between" sizes of magnetic controls in nine sizes and increment starters.

Ranco Inc.

Prominently displayed in Ranco Inc.'s booth will be four panels showing the firm's line of air conditioning de-ice, reversing valve, and commercial controls, it was announced.

Panel 1 will illustrate cycling controls of window air conditioners, 3000 series controls with fan switch, control with built-in fan switch, control for heat-cool and two-stage operation, and commercials for central cooling system panel.

Panel 2 will demonstrate the new de-ice control with explanation, No. 3 will show the V20 instant reversing valve, and panel 4 various commercial controls.

Wolverine Tube

Wolverine Tube, division of Calumet & Hecla, Inc. will focus attention on its theme, "Discover the Hidden Treasure In Tubing."

Most prominent feature in Wolverine's exhibit will be a large treasure map of product display boards shaped like a treasure chest, the firm said. On display will be "Trufln" integral finned tube, "Spun End" parts, "Tuff-braze" brazed steel tube, "Capila-

Typhoon

A new 40-ton custom designed packaged air conditioning unit for large commercial installations is one of several new units which will headline booths 413, 415, and 417 for Typhoon Air Conditioning Co., Div. of Hupp Corp.

The booths will be divided into two sections, one devoted to residential air conditioning units and a new line of gas and oil-fired furnaces, the other displaying commercial air conditioning equipment, it was disclosed.

For the first time, in addition to new 20 and 30-ton units, will be the Typhoon "Economair" packaged air conditioning unit designed for installation in basementless homes. It will be available in 2 and 3-ton capacities and displayed in a specially constructed attic

space the company further explained.

Also included in the exhibit will be the "Thrifty-Kool," a new 2, 3, and 5-ton packaged, low-cost residential air-cooled condensing unit, it was noted.

Servel, Inc.

A compact 3½-ton air conditioner that uses gas flame for both heating and cooling, and a 25-ton water chiller that operates on steam from any source will be highlighted in Servel, Inc.'s exhibit.

The 3½-ton "all-year" gas unit, known as "Sun Valley" is about half the size and weight of previous similar Servel units, it was explained. The 25-ton absorption-type water chiller uses steam to cool water from comfort cooling or industrial processing.

General Electric

General Electric Co.'s Commercial & Industrial Air Conditioning Dept. will occupy exhibit space 932 and have as theme of its display "General Electric Zone-by-Zone Air Conditioning Meets All Requirements for Any Building or Plant (New or Old)," the company announced.

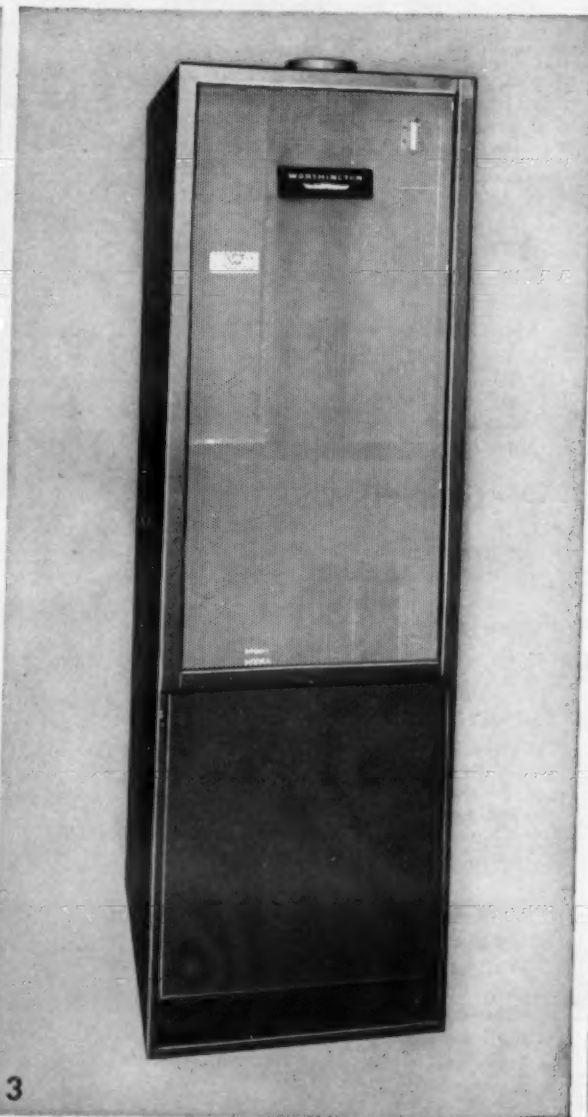
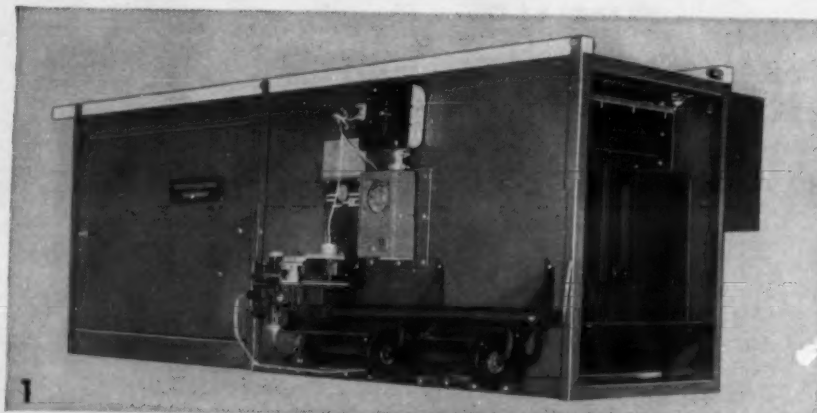
Features in the booth will be models of G-E's horizontal and vertical packaged air conditioner line, supported by illustrated case histories of installation, it was added.

Claimed advantages will be pointed up throughout the exhibit.

Also on display will be a working model of G-E's latest pressure-type water cooler, the company stated.

NEW FROM WORTHINGTON A COMPLETE LINE OF

Now you can get the finest heating and from one source...through one contact



1. HORIZONTAL: Model HOH Oil-Fired Furnace. Can be used as horizontal furnace in homes—or can be suspended as blower unit heater in commercial structures. Available in four sizes: 110,000, 150,000, 200,000, and 250,000 BTU Input. Models HOH-150, HOH-200, HOH-250 convert easily to gas-firing, as illustrated.

2. LOW-BOY: Model HOL-100 Oil-Fired Furnace. Compact and efficient. Ideal for basements where low headroom is a problem. Available in 100,000, 125,000, 150,000, 165,000 and 235,000 BTU Input sizes.

3. COUNTERFLOW: Model JBGC-80 Gas-Fired Furnace. Can be used

for perimeter heating or any installation where it is more practical to bring the heated air out of the bottom of the furnace. A.G.A.-approved for natural, mixed and manufactured gases. Direct or belt driven blowers. Available in 80,000, 100,000, 110,000 and 140,000 BTU Input sizes.

4. HIGH-BOY: Model HGV-100 Gas-Fired Furnace. Can be put in basement or utility room for perimeter, conventional, small-pipe or other installation. A.G.A.-approved for natural, mixed, manufactured or propane gases. BTU Input per Hour: 100,000. BTU Output per Hour at Bonnet: 80,000. ¼ hp. Blower Motor.

Cutler-Hammer

Cutler-Hammer, Inc. will draw attention in booth 740 to its refrigeration control, magnetic starters, manual starters, pushbutton stations, safety switches, and allied electrical equipment.

American Blower

American Blower Div. of American-Standard booths 22 and 26 will display a series of new products and equipment, it was announced.

Among new items to be exhibited are the 1957 line of commercial packaged air conditioners, low-horsepower class 2 glycol fluid drive, and a special illustrative display of the "Tonrac" single-stage hermetic centrifugal refrigerating machine.

A feature will be a special

grouping of cabinet type air conditioning unit components and sub-assemblies, it was noted. Included will be a capillary section, sprayed coil section, and fan section. Also to be shown are "Sirocco" utility sets, high-pressure fans, unit heaters for both gas firing and steam, "Ventura" propeller fans, "Diaflo" unit room air conditioners, and inductor-type air conditioning units.

Dunham-Bush

Two booths, 910 and 1244, one primarily for heating, the other primarily for air conditioning, will be features of Dunham-Bush, Inc.'s display.

Centered in each booth will be the firm's new "CR" conditioner available in four models and five

different sizes for use in hotels, apartments, and homes. A vertical unit with cabinet, vertical unit without cabinet, a horizontal unit with cabinet, and a horizontal unit without cabinet will be shown.

Another product to be featured at the show, in addition to a package chiller, will be Dunham-Bush's "Vari-Vac" controls and heating system.

Peerless of America

Peerless of America, Inc. will introduce a new "Universal-K" coil with fin coil surface for use in heating or air conditioning coils with water or refrigerant, the company announced.

The entire exhibit will show ways this fin surface can be rolled and bent in many different designs, it was added.

Imperial Brass

"Top-of-the-mark" products to be shown in Imperial Brass Mfg. Co.'s booth will be "Imperial Diamond" valves, torpedo driers, tubing tools, and charging and testing equipment, the company announced.

Other products which will be displayed are tube fittings in brass, steel, stainless steel, aluminum, and nylon, fluid control valves, shut-off valves, and pressure hose and reusable couplings.

New items include the 2-in-1 tube cutter, improved "Blue Dot" tube benders, "Micro-Strictor" for capillary tubing, and 9-in-1 flaring tool. Another product of interest, the firm noted, will be the "Magic-Eye" liquid indicator which shows the word "full" when the system is fully charged.

Curtis Mfg.

Booths 798, 750, 849, and 851 will highlight special displays of Curtis Mfg. Co.'s Refrigeration Div. Two packaged two-tone color air conditioners with one having plexiglas front and back to show workings, an air-cooled condensing unit for residential and commercial application with shell made of new colored aluminum, a 40-ton packaged air conditioner with all components included (shown for the first time), and a packaged liquid chiller redesigned more compactly will be "stars" of the exhibit.

Lau Blower

Lau Blower Co. will spotlight its "Electro-Wheel" and "Preslock" blowers in booth 836, the company announced.

A visual comparison between the firm's former A-15 unit and new A-15A Preslock blower will be shown in a stress test. New units will withstand more than 600 lbs. pressure, the company indicated.

Several models of the Electro-Wheel blower with the motor mounted within the wheel, in addition to Lau's entire line of wheels and blower assemblies will be on exhibit, it was added.

Henry Valve

New types 515 and 516 diaphragm packless valves of forged brass will be primary point of interest in Henry Valve Co.'s booth N440.

Products to be exhibited include valves, driers, strainers, and accessories for refrigeration, air conditioning, and industrial applications, the company indicated. It is planned to feature also the firm's semi-steel wing cap flanged valves with various type end connections.

Gibson

Featured in booths (210, 212, 214) of Gibson Refrigerator Co., Div. of Hupp Corp., will be a 3-hp. commercial air conditioner, a 3-hp. residential unit, a 3-hp. air-cooled model, an evaporator-blower, a gas-fired hi-boy furnace, and two other air conditioning units, the company announced.

White-Rodgers

Eyes will be focused on White-Rodgers Co.'s new "Fashion" thermostat in its booth, the company announced. This unit features new shape, color, and hinged cover which enables it to be painted and "disappear" into the wall.

Other featured items in the complete line of automatic controls for heating, air conditioning, and refrigeration include Fashion heating-cooling thermostat, new oil burner controls, new hot water controls, and combination oil burner-hot water controls, it was stated.

Betz Div.

Presented by Betz Div., Bohn Aluminum & Brass Corp., will be the "New Angle" on residential air conditioning evaporators, it was disclosed.

Two new models—"BV" which is a furnace bonnet unit for vertical air flow, and "BH" for horizontal air flow—will be spotlighted.

Also to be introduced are new "ACS" air-cooled condensers with a "sensitizer for winter control," the company further commented.

In the low temperature field, model "LR" will be offered for small walk-ins and cabinets. It will have "Vapor Hermetic" defrost.

WARM AIR FURNACES

*air conditioning equipment . . .
... on one policy!*



DEALERS! No other furnace line gives you all these competitive selling advantages.

Easy to install. Units shipped factory-assembled and prewired. Attach to any duct system—fit any out-of-way space.

Versatile—ideal for either residential or commercial use. New house or old. Exclusive features for versatility.

Wide choice of models—about 50 types and sizes ranging from 80,000 to 250,000 BTU/hr.

Especially designed for addition of summer air conditioning equipment. High static blowers available for most models and sizes.

Gas or oil-fired units—belt or direct driven blowers.

Exclusive up-draft heat exchanger design allows flue gases to escape—avoids dangerous trapping in pockets. Easily cleaned, long life.

Long flue travel provides greater efficiency—gives more heat transfer through heat exchanger and radiator.

Free floating radiator prevents contact with supports—eliminates noise . . . keeps heat exchanger strong.

Efficient tailored spun glass insulation has aluminum facing—covers entire casing area, increasing efficiency, quiet operation.

Heavy gauge casing cuts down on expansion and contraction noise. Smart, modern in appearance.

U-lock casing prevents heat leaks.

Casing finished on both sides—prevents rust when installed in damp places. Assures long life.

Oversized blower cuts noise and wear . . . consumes less power.

Continuous air circulation eliminates cold spots. Produces blanket of comfortable warmth.

Oil fired units have kiln-fired insulated refractory in combustion chambers—providing quiet, more efficient operation.

Controls provide 100% automatic operation.

Filters—for a cleaner home.

WORTHINGTON



SEND COUPON TODAY!

Worthington Corporation, AC&R Division, Harrison, N. J.

Please send details on new complete line of Worthington warm air furnaces.

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Store _____

Street No. _____

City _____ Zone _____ State _____

(PLEASE PRINT)

**SEE THIS FULL LINE OF
NEW WARM AIR
HEATING EQUIPMENT in the
WORTHINGTON CLIMATE VAN**

Booth 954—Heating & Air-Conditioning
Exposition, Chicago, February 25 to March 1.

Preview

Prominent Displays Offer Visitor Promise of Interesting Show In Chicago Amphitheater

Lennox

Prominent in the Lennox Industries, Inc. booth will be two new lines of equipment. The "Comfort Curtain System" for heating and ventilating school classrooms will be displayed for the first time, the company said.

Also to be introduced at the show is a line of powered and gravity roof ventilators from 12 to 48 in. in diameter for handling exhaust air for commercial and noted.

Industrial applications, it was

Airtemp

A two-floor display for air conditioning and heating products on the ground level and room air conditioners above will be focal point of Airtemp Div., Chrysler

Corp.'s exhibit in booths 12 and 43.

Products slated for showing include six water-cooled packaged air conditioners, five air-cooled condensing units, five hi and lo-boy furnaces, complete home "Spacesaver" air conditioning systems, a large radial compressor, an auto air conditioner installed in a car, series 1118 low-cost home cooling unit, and 11 room air conditioners, the company said.

Carrier

Products representative of Carrier Corp.'s full line of year-round air conditioning and refrigeration equipment ranging from a room unit to central system apparatus will be displayed at the show in booths 515, 517, and 519.

In operation will be one of the

firm's hermetic centrifugal refrigerating machines. Electronically controlled, the large-capacity cooling unit is turned on or off by a single pushbutton, it was explained.

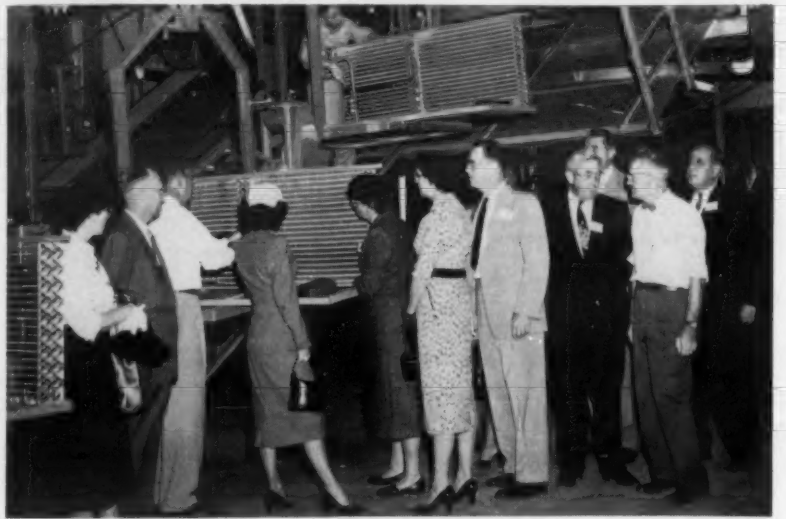
Worthington

Feature of Worthington Corp.'s exhibit will be the new "Climate Van," a complete mobile display of Worthington's line of packaged heating and air conditioning equipment.

In addition to the Climate Van, the firm will show a complete hermetic centrifugal refrigeration unit, it was explained. Other units on display in booths 1055, 1059, and 1063 will include a new two-stage centrifugal compressor, new hermetic packaged liquid chiller, air-handling units, fan and coil room air conditioners, and a new line of induction circulator units.

Frigidaire




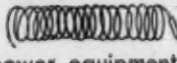






Frigidaire Div., General Motors Corp. intends to have all eyes focused on its 1957 line of residential heating and air condition-



RECENTLY six dealers and six distributors from across the nation were awarded a trip to Mexico by General Electric Co. En route they visited the new multi-million dollar Home Heating and Cooling plant in Tyler, Texas. Some are shown here inspecting the Tyler assembly line of air-cooled coils that will be placed in 1957 G-E residential air conditioners. These dealers and distributors with their wives were given a 10-day trip to Mexico as a result of the improved sales records they hung up in residential cooling during the past year. The Tyler plant is now in full operation.



How Can We Cut Tube Costs?

You can make an excellent start by specifying aluminum products manufactured by Wolverine Tube! Wolverine has grown with the refrigeration  and air conditioning  industries—has specialized products and services designed to save you both time  and money. By specifying Wolverine's prefabricated evaporator sub-assembly,  for example, manufacturers can realize substantial savings through releasing manpower, equipment and floor space for other duties. Further savings can be made by using Wolverine's aluminum Spun End Process† for fast, economical production of one-piece accumulators, driers and receivers.  Because they are prefabricated, Wolverine copper-to-aluminum connectors  provide an economical method for using both copper and aluminum tube in the same refrigeration cycle. Wolverine extruded aluminum shapes  reduce machining and assembly operations. Other Wolverine time and money savers are extra-long coils  of drawn or extruded aluminum tube and a packaging program  that meets customers' production line needs. These are but some of the ways in which Wolverine can help you cut tubing costs. More detailed information is contained in Wolverine's new book "Wolverine Serves the Refrigeration Industry". Write for your copy  today.

†OTHER PROCESS PATENTS PENDING

CALUMET & HECLA, INC.

CALUMET DIVISION
WOLVERINE TUBE DIVISION
FOREST INDUSTRIES DIVISION
GOODMAN LUMBER COMPANY
CALUMET & HECLA
OF CANADA LIMITED
CANADA VULCANIZER AND
EQUIPMENT COMPANY LIMITED



WOLVERINE TUBE

Division of Calumet & Hecla, Inc.
1413 CENTRAL AVE. DETROIT 9, MICH.

Manufacturers of Quality Controlled Tubing and Extruded Aluminum Shapes

PLANTS IN DETROIT, MICHIGAN, AND DECATUR, ALABAMA. SALES OFFICES IN PRINCIPAL CITIES
EXPORT DEPT., 13 E. 40TH STREET, NEW YORK, N.Y.

ing units in space 29 at the show.

Models of the firm's complete new year-round line of oil and gas-fired furnaces, "Master-matic" and "Multi-matic" air conditioners and room units are scheduled for display, the company announced.

A vertical gas furnace will be shown with a simulated hookup, while another model vertical gas-fired furnace will show construction and features in cutaway.

Schnacke, Inc.

A complete enlarged pictorial review of all "Thermatrol" compressors and condensing units of 5 to 60 hp. will be prominently displayed by Schnacke, Inc.

Also to be included are the complete line of standard package water chillers and views of the specification line of water chillers from 10 to 120 tons.

In addition, the "Dual Temperature" model which includes boiler and water chiller unit completely piped and assembled with all controls and changeover switch will be shown, the firm said.

To be introduced is the Thermatrol line of 3 to 30-ton cooling towers which includes propeller-type fan with a new blow-through design.

Acme Industries

Acme Industries, Inc. will exhibit in booth 903 and feature a representative unit from each of its three lines of packaged liquid chillers—an air-cooled and water-cooled "Flow-Pac" unit of 1½ through 5 tons, a "Flow-Cold" chiller of 3 through 20 tons capacity which will have a completely enclosed control panel, and a "Flow-Therm" unit range 20 through 125 tons, it was announced.

Also to be exhibited will be a unit from the 1957 line of "Flow-Mizer" cooling towers of 20 through 100 tons and Flow-Cold cooling towers (3 through 20 tons). These units will feature the new Acme "Plastic-Pak" and be in operation in the booth. Other items will include "Flow-Temp" remote room conditioners, component parts, and a production flow-diagram of new plant facilities.

Ready-Power

Ready-Power Co. will display a production model of its air conditioning central system type power unit driven by natural gas engine in booth 1145. Capacity range of single units is from 22 to 76 tons of refrigeration in the automatic system.

The firm claims the unit has "extremely low-cost operation" and is able to provide comfort conditions by maintaining constant control of both temperature and humidity through a constant cooling coil temperature.

Preview

Many Types of Furnaces, Add-On Conditioners To Be Spotlighted In Combination Exhibits

Engel Sheet Metal

In booths 101 and 102, Engel Sheet Metal Equipment, Inc. will display the new 1957 "Shopmaster" tool for cutting, trimming, slitting, and laying out metal for sheet metal products.

A redesigned automatic flanging tool, open end flangers, "Lesto" products, electric metal shears, and nibblers will also be exhibited, it was noted, along with calibrated bench bars and squares, and punch presses.

The firm hopes to introduce an "entirely new" tool which will be centered in the display if completed in time, it was added.

Binks

Binks Mfg. Co. will display its 3B-6 cooling tower in booth 1172 at the show, it was announced.

This frame size is rated at 12 tons of refrigeration at 78° w.b. temperature, it was indicated. The entire range of the 3B series is from 6 to 240 tons.

Air propulsion equipment is located in the dry air stream for "whisper quiet" operation, the company stated.

Vilter

Vilter Mfg. Co. will exhibit a "Uni-Chiller" in its booth N321 at the show.

Of 75-hp. size, the unit will comprise a six-cylinder VMC compressor, an insulated water chiller, and a shell-and-tube condenser, all mounted on a steel base and frame.

Several enlarged photographs of recent air conditioning installations will serve as background in the space.

Young Radiator

Young Radiator Co. believes its display of the firm's new V-1000 "Vertiflow" unit heater will be of special interest to visitors at booth 206.

In addition to the V-1000, capable of 1 million B.t.u.h. and equipped with a motor-driven revolving outlet, Young will exhibit its full line of "Roomaire" conditioners, remote room air conditioning units available in four models, the company said.

Waterloo Register

Waterloo Register Co. will feature in booth 337 its entire line of grilles, registers, door vents, air volume controllers and extractors, and plaster frames.

The display will also include a variety of "specials" produced to engineers' specifications, it was stated.

Ingersoll-Rand

Ingersoll-Rand Co. will exhibit in booths 1255 and 1257 its complete line of centrifugal pumps and will show pumps in operation, the company announced.

The exhibit will feature an educational display to demonstrate results of friction loss in piping and fittings, it was added.

Maxitrol

Maxitrol Co. will spotlight gas appliance regulators in booth 321, it was announced.

Two distinct types of pressure regulators for gas appliances will be displayed. One is intended for main burner load applications only, the other for main burner and pilot load applications.

Center theme of the exhibit will be a rotating framework containing cutaway models of two regulators of the largest size the firm makes. These models will demon-

strate "Straight-Thru-Flow" construction, the company said.

On display for the first time will be model RV-30 Maxitrol gas regulator to be made available in $\frac{1}{8}$ and $\frac{1}{4}$ -in. pipe sizes. Intended for use on small heating appliances, water heaters, and clothes dryers, the unit will feature construction using a synthetic rubber seating surface, the firm added.

Crane Co.

Crane warm air and hot water heating equipment will be exhibited along with Crane air conditioning equipment at the Crane Co. booths 33 and 37.

Featured units will include the "Sunnyday" series of five hot water boilers for residential heating, "Sunnyland" furnaces, "Sunnybase" panels, and "Sunnywall" radiation.

Both gas and oil-fired equipment will be shown.

A national weather map overlaid with a map of the company's distribution system, and a lounge are to be other booth features, the company said.

Dravo

What is termed an entirely new concept of burning fuels in direct-fired forced-air space heaters will be introduced by Dravo Corp., it was announced. The exhibit will be in booth 867-869.

Heart of the new heater is an induced draft "Pyro-Jet" burner suited for gas, light oil, heavy oil, or combination gas-light oil firing, it was explained. This heating principle has been incorporated in the company's 1957 series of "Counterflo" heaters for increased efficiency. Available in nine sizes, the units range from 250,000 to 2 million B.t.u.h. output capacity, it was added.

Maid-O'-Mist

A complete display of warm air, hot water, steam, and spray humidifiers will be highlighted in Maid-O'-Mist, Inc.'s display in booth 216.

Maid-O'-Mist will demonstrate float and expansion-type hot water heating system air eliminators and introduce a new No. 16 angle balancing valve adapter, and a new No. 37 auto-vent air eliminator for use in horizontal mounting only.

A full line of steam boiler water level controls will be shown, the manufacturer further commented.

NEW RANCO "G" CONTROLS

Simplify Air Conditioning Control Panel Design

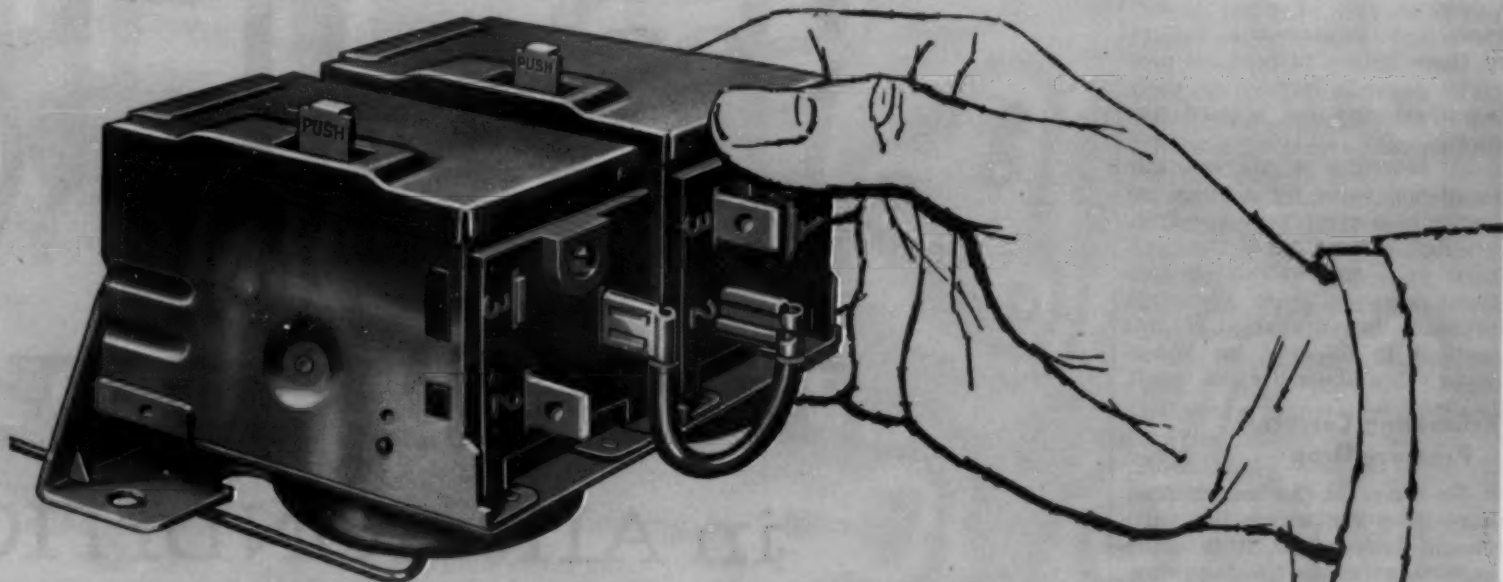
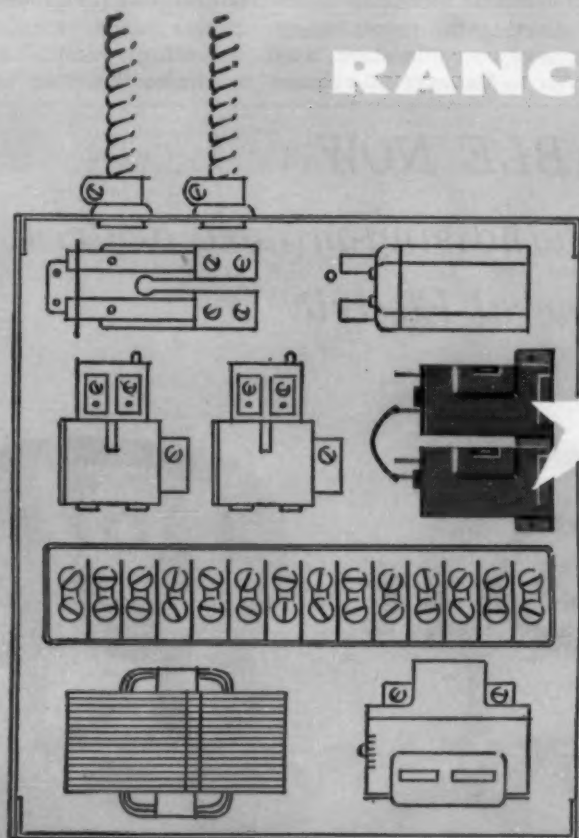
Compact new models accommodate high-pressure, low-pressure and dual-pressure installations

Both the compactness and the versatility of Ranco's dependable new G Controls help simplify the design and facilitate the production of your air conditioning control panel.

Trim size and shape of the new models conserve space in your control panel. Their simplicity of design eases installation. And their features permit economical adaptability to your specific product.

The new G line includes both high and low-pressure models with automatic or manual reset; low-pressure cycling controls with differential adjustment; and dual-pressure controls. A variety of switch assemblies is available to accommodate your product requirements.

We'll be happy to show you how Ranco's new G Control can meet your standards for design and performance. Call or write today—Ranco Inc., Columbus, Ohio.



High and low-pressure Ranco G Controls mounted on single bracket, connected electrically by a jumper.

Note these versatile features of Ranco's new G Controls:

- Automatic or manual reset.
- Switch assemblies for a variety of electrical loads.
- Differential adjustment for single low-pressure models.
- 7 to 425 psi ranges (non adjustable).
- Screw or quick-connect terminals.



Ranco Inc.

COLUMBUS 1, OHIO WORLD'S LARGEST MANUFACTURER OF REFRIGERATION CONTROLS

Thermostatic Expansion Valve Selection

Versatile Unit May Be Used In System When Evaporator Temperature, Load Is Narrow, Wide, or Mixed, Expert Says

The thermostatic expansion valve is probably the most versatile, popular, and economic type of liquid refrigerant expansion valve. It is a precision device which regulates the rate of liquid refrigerant flow to the evaporator in exact proportion to the rate of evaporation of the liquid refrigerant in the evaporator.

Operation

It is operated by:

A. The remote bulb pressure created by the temperature of the superheated refrigerant gas leaving the evaporator.

B. The evaporator pressure.

C. The superheat spring.

Since this valve operates on the principle of superheated refrigerant gas leaving the evaporator, it affords protection against the return of liquid refrigerant to the compressor while allowing the evaporator to operate in an efficient way.

This valve may be used in a system for:

A. A narrow range of evaporator temperature and load.

B. A narrow range of evaporator temperature and a wide range in load.

C. Both a wide range in evaporator temperature and load.

You can see that the job to be done by the thermostatic expansion valve may be easy or difficult depending upon the system arrangement and requirements.

Therefore the choice of these valves for each different system should be carefully considered and selections made only after the engineer fully understands what is expected.

Application of these control valves is also of great importance and the success or failure of these valves to perform properly depends largely on their being selected and applied correctly.

In selecting a thermostatic expansion valve for a given capacity at a given pressure drop, a rough calculation of the pressure drop by subtracting suction pressure from discharge pressure is unreliable. If this method is followed an undersized valve is usually the result.

Estimating Correct Pressure Drop

To arrive at the correct pressure drop for which the valve should be selected, it is necessary to estimate the following:

A. Compressor discharge pressure

B. Pressure drop through the condenser

C. Pressure drop in the liquid line

1. Pressure drop in liquid line due to friction

2. Pressure drop in liquid line due to vertical lift or pressure gain in liquid line to due to vertical head of liquid refrigerant

3. Pressure drop through solenoid liquid valve

4. Pressure drop through drier in liquid line

D. Pressure at the thermostatic valve inlet

$$D = A - (B + C)$$

E. Compressor suction pressure

F. Pressure drop in suction line due to friction

G. Pressure drop in evaporator

H. Pressure drop in distributor and connecting tubes

I. Pressure at the thermostatic valve outlet

$$I = E - (F + G + H)$$

J. Pressure drop across thermostatic expansion valve

$$J = D - I$$

If flash gas is created in the liquid line as a result of insufficient subcooling, the liquid line pressure loss due to friction will be much greater.

All valve manufacturers publish capacity ratings based on

vapor free liquid refrigerant entering the thermostatic expansion valve. When flash gas is entering the valve, its capacity will be greatly reduced.

Sometimes this condition is tolerated by purchasing an oversized thermostatic valve which throughout all seasons of operation may not provide the quality of control required. The best thing to do is to provide sufficient liquid refrigerant subcooling to avoid the flash gas condition.

Power Assembly Charge Selection

In selecting the power assembly charge, consideration must be given to the over-all require-

Success or failure of thermostatic expansion valves to perform properly depends largely on their being selected and applied correctly.

John A. Schenk, director of engineering for the Alco Valve Co., outlined clearly the factors to be considered in selection and applications of these valves at the Product Knowledge Clinic sponsored by Region 6 of the Air Conditioning & Refrigeration Wholesalers and held in Chicago last December. His talk is reproduced on these pages.

ments of the system. These charges should be selected in accordance with the valve manufacturers' recommendations for best performance.

The liquid vapor charge (sometimes called liquid charge), usually consisting of the same refrigerant as is used in the system, provides essentially a constant superheat over a reasonable range of evaporator temperatures.

The liquid vapor cross charge is designed for greater power to deliver rated valve capacity at operating conditions and to minimize "hunting" throughout

the range of the charge.

This charge is primarily designed for low temperature application. The inherent high superheat characteristic during pull-down prevents "floodback" on starting and compressor motor overload during the pull-down period.

This high superheat is reduced to a practical operating value as the evaporator temperature is lowered to the desired operating range. Valves with this type of charge should be set for optimum superheat

(Continued on next page)

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7. National advertising in more magazines than ever—supplemented by especially hard-hitting sales promotion.

8. Powerful 8-lesson training course in successful selling of commercial and industrial air conditioning.

Thermostatic Expansion Valve--

(Continued from preceding page) at the lowest evaporator temperature expected in order to avoid "floodback."

Liquid and liquid cross charged valves may be installed in any position or location regardless of whether the valve body temperature is warmer than or colder than the temperature of the remote bulb because there is always sufficient liquid charge in the remote bulb to maintain control under all conditions.

Gas Charge Valve Offers Motor Compressor Overload Protection

A gas charge valve can provide compressor motor overload protection on some systems because of its limiting effect on the maximum operating suction pressure. It also pre-

vents "floodback" on start-up.

However, an increase or decrease in the superheat setting will change the maximum operating pressure accordingly. The gas charge with its quick response rate provides a faster acting valve.

Since a gas charge valve contains a limited amount of charge in the power assembly, it is important that this drop of liquid charge remain in the remote bulb. The valve must be placed in a location that will allow the power head and remote bulb tubing to be warmer than the remote bulb.

This will prevent condensation of the charge in the power head or remote bulb tubing which would otherwise make the valve inoperative.

Gas charged valves, while not limited in their application, perform to best advantage on

water chillers and air conditioning units with evaporator temperature range between 30° and 50° F.

In some special applications where care has been taken in the location of the valve and remote bulb tubing, these valves are used on extremely low temperature operating units in the range of minus 100° to minus 150° F.

Thermostatic expansion valves are available with either the internal or external equalizer feature. The external equalizer is used when the pressure drop through the refrigerant distributor or the pressure drop through the evaporator would otherwise have an adverse effect on the operation of a valve with the internal equalizer feature.

The external equalizer line, when required, should be installed beyond the point where the greatest pressure drop occurs.

Connect Equalizer Line To Suction Line

As a general rule, when the pressure drop through the evaporator is unknown, it is safest to connect the equalizer line to the suction line at the evaporator outlet on the compressor side of the remote bulb location.

Using this method, thermostatic expansion valve operation is unaffected by the pressure drop, which may exist from the valve outlet to the suction line. When the external equalizer is connected to a horizontal line, connect it to the top of the line in order to avoid oil logging in the equalizer line.

When the pressure drop through the evaporator is not in excess of the following values for Refrigerant 12, it is permissible to install the external equalizer connection at the evaporator inlet with one of the distributor tubes.

2.5 p.s.i. in the air conditioning range

1.5 p.s.i. in the commercial range

0.5 p.s.i. in the low temperature or food freezer range.

When the pressure drop through the evaporator is not in excess of twice the above values, it is permissible to install the external equalizer connection on one of the return bends midway through the evaporator.

Such an equalizer location will provide smoother valve control, particularly when the thermostatic expansion valve is used in conjunction with an evaporator pressure regulator.

On a multi-evaporator system, where each evaporator is fed by a separate thermostatic expansion valve, each external equalizer line should be located so that it will be free as possible from the effect of pressure changes in the evaporators fed by the other valves in order to minimize any tendency to produce valve "hunting."

If the individual lines from the evaporator suction headers to the common suction line are short and without restriction, the equalizer lines will have substantially the same pressure in them and in effect act as though they were connected by a common line.

In such a case when there is no "hunting" tendency, the equalizer lines could be joined to a common line; however, this is the exception not the rule.

Do not merely cap or plug the external equalizer connection on a valve as this can prevent proper operation. If the valve is furnished with the external equalizer feature, the external equalizer line must be installed, unless the conversion to internal equalization is made in the valve.

External Remote Bulb

The external remote bulb meets the requirements of most installations. It should be clamped to the suction line near the evaporator outlet. The suction line should be cleaned thoroughly before clamping the remote bulb in place.

When a steel suction line is used, it is advisable to paint the line with aluminum paint or the equivalent to minimize corrosion and faulty remote bulb contact with the line.

On horizontal suction lines under 3/8-in. o.d., the remote bulb may be installed on the top or the bottom of the line. On lines 3/8-in. o.d. and over, the remote bulb should be installed at 45° below the horizontal or at about 4 or 8 o'clock.

In this position the bulb will feel liquid refrigerant, returning on the bottom of the suction line at low load conditions, much quicker than if it was located on top of the suction line.

If the remote bulb is located so as to prevent the thermostatic expansion valve from closing quickly, then it is possible to have a condition, where, periodically liquid refrigerant may be returned to the compressor.

If it is necessary to protect the remote bulb from the effect of an air stream, after it is clamped to the suction line, use a material such as sponge rubber that will not absorb water
(Concluded on next page)



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For 20 years commercial and industrial air conditioning has been building to a boom. Now it's here...the Billion Dollar Decade! Ten years with a tremendous sales potential!

9. Unique "Sell-a-Pac" Kit—helps retail salesmen close more sales faster.

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And this is only the beginning! Come and get your front row seats to the Billion Dollar Decade! See your G-E Distributor for complete details—or use coupon. → Commercial & Industrial Air Conditioning Department, 5 Lawrence Street, Bloomfield, N. J.

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Progress Is Our Most Important Product

GENERAL  ELECTRIC

For more information about products advertised on this page use Information Center, page 42.

Thermostatic Expansion Valve--

(Concluded from preceding page) with evaporator temperatures above 32° F.

Below 32° F. cork or similar material, sealed against moisture, is suggested to prevent ice logging at the remote bulb location. The use of hair felt for this purpose is not recommended.

When the remote bulb is below the brine level of a submerged coil, use a water proofing material or pitch, that does not require heating above 120° F. in applying it, to protect the remote bulb tubing and remote bulb.

When it becomes desirable to increase the sensitivity of the remote bulb, it may be necessary to place the bulb in a remote bulb well. This method is recommended for short coupled installations and installations having large suction lines (2½-

in. o.d. or larger) where:

A. Very low superheats are desired.

B. Load variation produces extreme changes in suction line velocity.

C. Large size suction lines are encountered.

Avoid Placing Bulb At Suction Line Trap

Never under any circumstances should either type of remote bulb be placed where the suction line is trapped. Any collection of liquid refrigerant at the point of remote bulb location will cause erratic operation of the valve.

Large fluctuations in pressure and superheat of the suction gas are usually the result of trapped liquid refrigerant at the remote bulb location.

Always locate the remote bulb on the evaporator side of

any refrigerant liquid to suction heat exchanger, in order to promote stability of thermostatic expansion valve control.

For best evaporator performance, the thermostatic expansion valve should be applied as close to the evaporator as possible and in such a location as to make it easily accessible for adjusting and servicing.

When the pressure drop or centrifugal type refrigerant distributor is used to feed the evaporator, apply the valve as close to the distributor as possible. Don't use an elbow fitting at the distributor inlet.

When the manifold type refrigerant distribution header is used, where velocity is not desired, install a baffle in the header, which will minimize the tendency to overfeed the evaporator circuits directly opposite the header inlet connection or feed the header at 90° from the evaporator tube connections.

On a multi-evaporator sys-

tem, if rising suction lines are needed to connect to the suction main, they should rise above and connect to the top of the suction main.

In this manner any overfeed from one evaporator will not affect the remote bulb of another valve. In addition, an oil trapping problem will be avoided.

"Hunting" of the thermostatic expansion valve can be defined as the alternate overfeeding of the refrigerant flow to the evaporator.

How To Avoid 'Hunting'

It is recognized by extreme cyclic changes in both the superheat of the refrigerant gas leaving the evaporator and the evaporator or suction pressure. "Hunting" can be minimized, eliminated, or avoided by:

- Good evaporator design.
- Good thermostatic valve design.
- Selection of proper valve

size and type of thermostatic charge.

D. Correct application of the remote bulb and external equalizer line.

E. Correct arrangement of suction piping.

Ordinarily, pilot operated thermostatic expansion valves consist of using a small thermostatic expansion valve to pilot a larger piston type spring loaded expansion valve.

In the pilot operated construction, the piston type spring loaded expansion valve can be readily designed with the long stroke and characterized plug features, which are desirable for good regulation of the system.

The small thermostatic expansion valve supplies pressure to or bleeds pressure from one side of the expansion valve piston which contains a small bleed hole. The force created by the pressure difference across the piston is used to position the spring loaded expansion valve and regulate the liquid refrigerant flow to the unit's evaporator.

By installing a pilot solenoid valve ahead of the pilot thermostatic expansion valve, the spring loaded expansion valve also serves as a liquid stop valve, when the pilot solenoid valve is closed.

These valves are used on direct expansion water chillers and other similar loads in the range of 20 tons and above for Refrigerant 12.

Northern Indiana Brass Changes Name to NIBCO

ELKHART, Ind. — Corporate name of Northern Indiana Brass Co. became "NIBCO Inc." on Jan. 1, according to Paul H. Nankivell, director of sales.

The firm, a manufacturer of valves and fittings for copper plumbing, has used the term "NIBCO" for many years as a trade-mark to identify its products. The word itself is coined from the initials of the previous company name.

NIBCO Inc., with home office and plant in Elkhart, also operates manufacturing plants in Nacogdoches, Texas and Glen Falls, N. Y., as well as strategically located warehouses in principal cities.

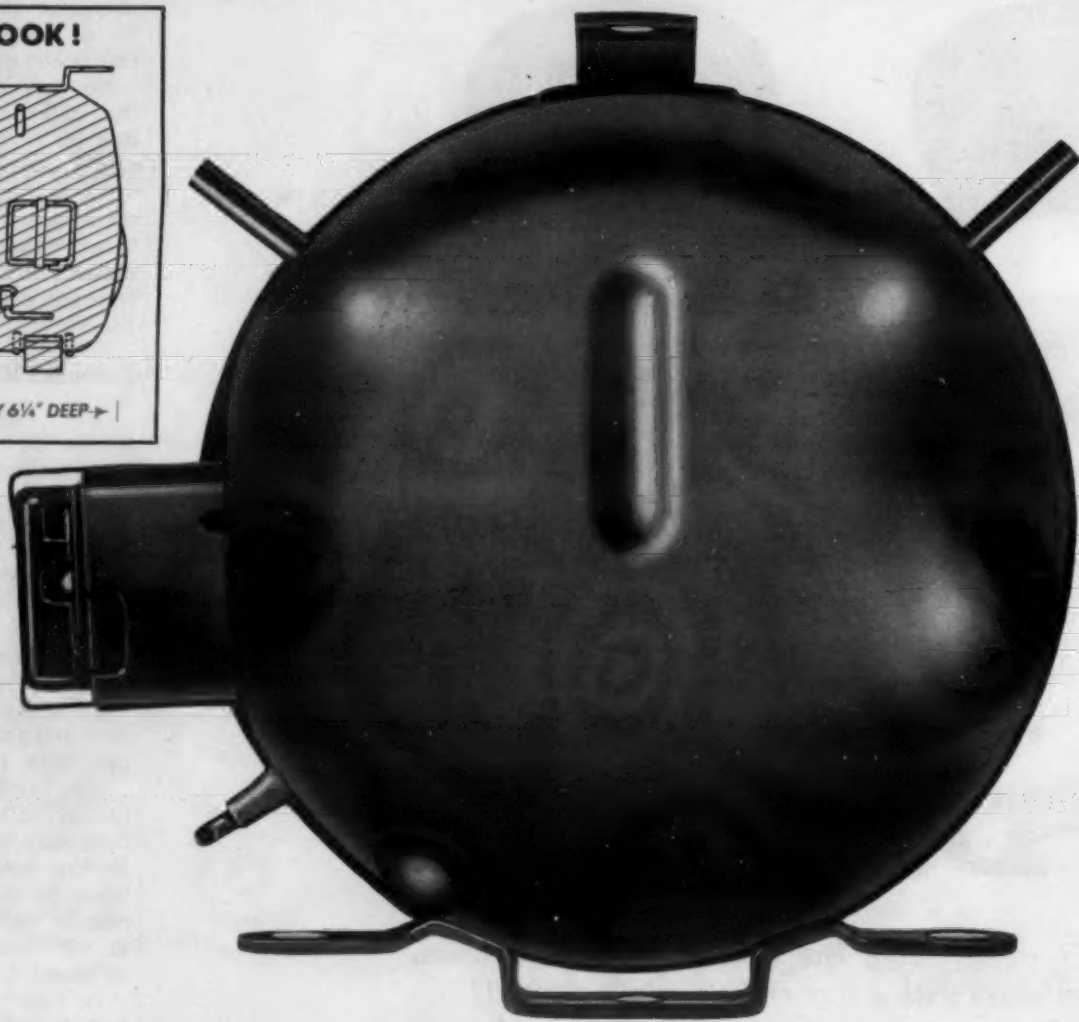
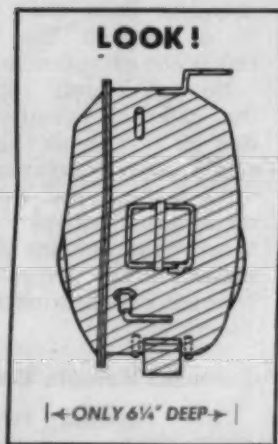
Penn Controls Moves Philadelphia Office

GOSHEN, Ind. — Penn Controls, Inc. has announced that its Philadelphia district sales office and warehouse have moved to a new location in that city to better serve the control requirements of manufacturers, wholesalers, and dealers in the metropolitan area.

New address of the branch office is 620 Huntingdon Pike, Rockledge (Philadelphia 11, Pa.).

A. W. Barr, Penn's eastern regional sales manager, said the Rockledge location's easy accessibility from downtown Philadelphia, from New Jersey, and from the Pennsylvania Turnpike, along with excellent parking facilities, prompted the move.

Former location of the Philadelphia branch was at 4503 N. Broad St.



LOOK!
ONLY
10 11/32"
HIGH

LOOK! ONLY 11 3/8" WIDE

**COMPACT, LIGHT WEIGHT, HIGH CAPACITY, TOP QUALITY
... ONLY 10 11/32" HIGH x 11 3/8" WIDE x 6 1/4" DEEP!**

Kelvinator now is in production on a series of new, truly compact sealed compressors. These advanced-design "Space-Saver" units have been thoroughly proved in volume testing of production runs. Available in models for natural or forced convection applications,

they are ideally suited for household refrigerators, freezers, water coolers, dehumidifiers, beverage coolers and many other refrigerated products. Write now for complete information to Contract Department, Kelvinator Div., 14250 Plymouth Road, Detroit 32, Mich.

Kelvinator

Division of American Motors Corporation • Detroit 32, Michigan



AMERICAN MOTORS MEANS
MORE FOR AMERICANS

SPECIALISTS IN REFRIGERATION SINCE 1914

For more information about products advertised on this page use Information Center, page 42.

Preview

Colorful Background To Show New Products In Best Light at Heating and Cooling Show

American-Standard

Center of attention in booth 20 will be year-round fluid comfort stressing new residential and commercial products available from Plumbing & Heating Div. of American Standard.

Products will be grouped in families, including gas-fired boilers, oil-fired boilers, baseboard heating, radiation, commercial systems, and residential units, it was added.

New products to be highlighted include new "Arcoleader" oil-fired boiler package, new A-7 oil-fired boiler, new model PH high-pressure, single adjustment oil burner, new model 10 high capacity "Radiantrim," new model S-R self-contained "Remotaire" air conditioning system, and new residential Remotaire air conditioner.

Armstrong Cork

Main accent of Armstrong Cork Co.'s display in booth 136 will be on the job adaptability and installation techniques applicable to "Armaflex," a new flexible foamed plastic pipe insulation.

A short program of booth demonstrations will serve to illustrate recommended installation techniques for the product for all types of pipe and tubing. Other featured products will include "Armaglas" duct insulation and pipe covering materials, Armstrong application and finishing materials, and LT cork covering and corkboard, it was added.

Doerr Electric

Central point of Doerr Electric Corp.'s exhibit in booth 561 will be motors of both standard and special design for use on pumps and other equipment associated with the air conditioning, heating, and ventilating fields, the company stated.

Baltimore Aircoil

A new CM 30 blow-through evaporative condenser and a TU 40 draw-through type cooling tower will be center-stage at the Baltimore Aircoil Co., Inc.'s booth.

These units represent the firm's first complete line of both evaporative condensers and cooling towers offering draw-through and blow-through fan arrangements, it was stated.

Focal point of the exhibit, the company said, will be a backdrop display emphasizing the flexibility of the new BAC line. Two units

will be displayed for inspection. In addition, there will be photographs showing the new BAC plant.

Carnes Corp.

Carnes Corp.'s display in booth 407 will feature a full line of ceiling diffusers, air conditioning registers and grilles, latest in power roof and sidewall ventilators, and the model "RC" convertible diffuser, it was announced.

Kinney Mfg.

In booths 1155-1159, Kinney Mfg. Div., New York Air Brake Co. will spotlight the exhausting of an air conditioning unit with two sizes of Kinney high vacuum pumps.

Benefit of gas ballasting high

vacuum pumps will be shown, according to the company, and also use of valves designed for high vacuum application with emphasis on sweated fittings. Leak detection by probing with a mass spectrometer will be another feature, it was added.

'Krack'

"Krack" exhibit in booth N422 will provide visitors an opportunity to view one of the largest single unit air-cooled condensers now available, Refrigeration Appliances, Inc. announced.

Unit to be on display has a nominal capacity of 45 tons and is capable of delivering 31,500 c.f.m. It is a standard production item and rounds out Krack's line of 10 air-cooled condensers ranging in size from 1 to 45 tons, it was indicated.

Also on display will be the "Komfort Master" air handling unit, a remote ceiling type air conditioner, available in sizes from 2 to 50 tons with a variety of coil combinations.

The company's display will also

highlight various types of coil surfaces for residential and commercial applications, including a V bank furnace bonnet coil and the "HRE" horizontal evaporator.

Brown Products

Brown Products Corp. will highlight its new 10-hp. packaged chiller which consists of two 5-hp. hermetically sealed packaged units set on a single base with chiller and condenser water manifolds.

Also on exhibition will be a 3-hp. hermetically sealed, air-cooled packaged chiller designed for residential air conditioning, remote room units with low-pressure drop coil, the "Bayce-Heet" line of baseboard radiation with interchangeable $\frac{1}{4}$ and 1-in. elements, it was stated.

Dover Mfg.

Featured in the Dover Mfg. Co. booth N343 will be three sample cooling towers.

A 5-ton steel induced draft crossflow tower with redwood fill, propeller fan, and horizontal air

discharge, a 3-ton all-steel natural draft tower, and a 15-ton steel induced draft vertical counterflow tower with centrifugal fans, galvanized steel decking, and top horizontal air discharge will be displayed, the company said.

Across the back of the exhibit will be a display piece telling the story of how all-steel parts of Dover's towers are hot-dip galvanized after fabrication.

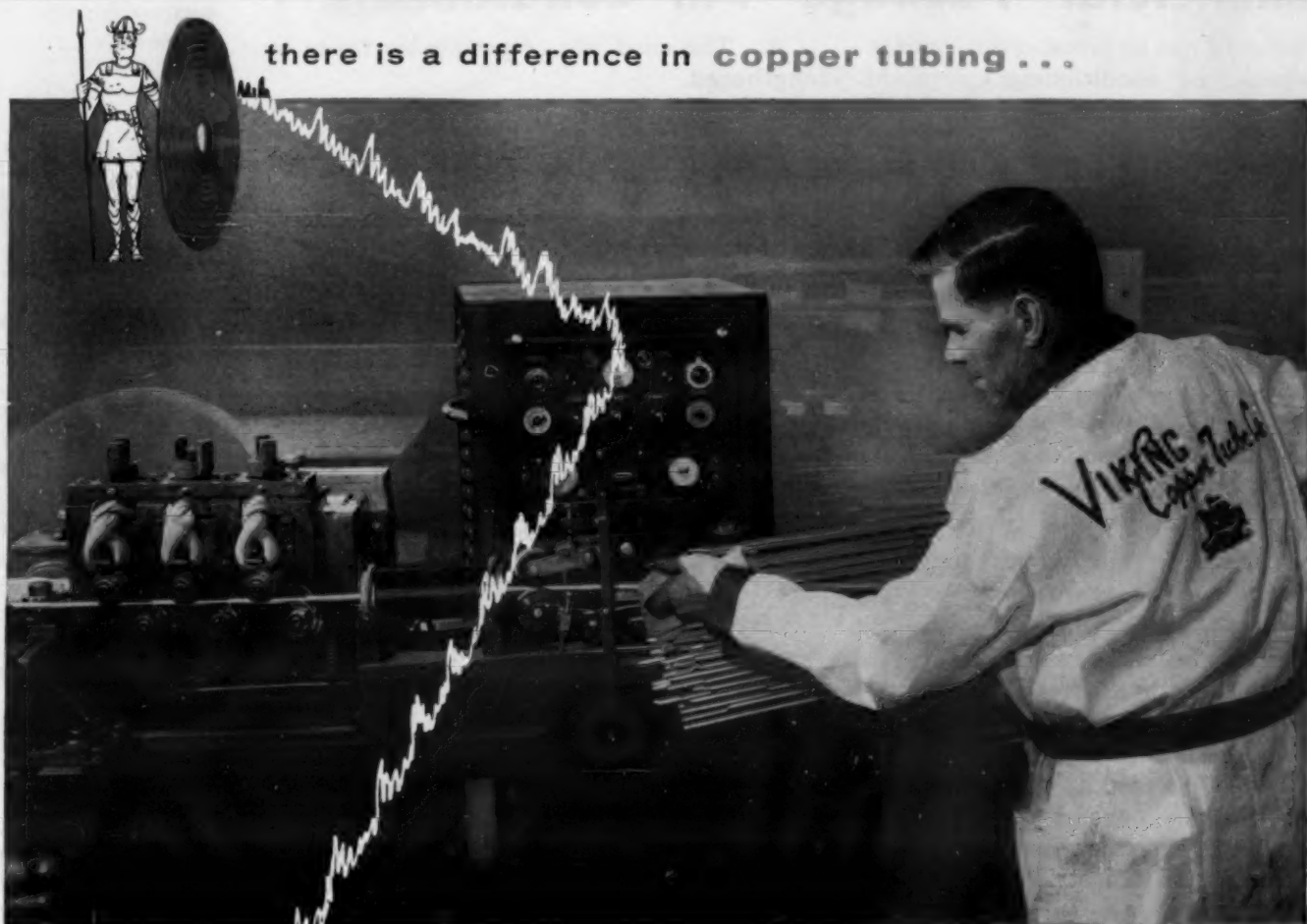
Milwaukee Elec. Tool

Milwaukee Electric Tool Corp. will center its display in booth 215 on the firm's "Sawzall" portable hacksaw, right-angle drive drills, "Selfeed" bit, and new Pittsburgh lock hammer, it was announced.

Century Engineering

Century Engineering Corp. will show in booths 825 and 829 its new 2 and 3 $\frac{1}{2}$ -hp. "Coolpak" central air conditioning units, the firm said.

In addition, the company's full line of furnaces and air conditioning systems will be displayed.



there is a difference in copper tubing ...

the difference in VIKING is

THE **BRAIN** THAT SREAMS FOR QUALITY



Insures service satisfaction for all coolers, ice-makers! Clear, taste-free water ... crystal ice ... every day ... in all locations.

FILTRINE MFG COMPANY

216 W. PROSPECT ST. • WALDWICK, N. J.

In VIKING's ultra modern plant, an electronic "Brain" literally "screams" when defective tubing passes through its field. The minutest flaw or imperfection in the wall of the tubing causes the "Brain" to flash lights, ring bells and blow horns signalling the operator and automatically discarding the defective tubing.

This unique application of electronic science to the manufacture of VIKING copper tubing virtually assures trouble-free fabrication of the thinnest wall tubing — almost completely eliminating operational failures in tubing.



VIKING COPPER TUBE CO.

CLEVELAND 10, OHIO

PRECISION DRAWN SEAMLESS COPPER AND ALUMINUM TUBING

EXTRA STRENGTH

The proper kind of strength and ductility is vital in tubing used for refrigeration and air conditioning purposes. Copper tube possesses these qualities to a far greater degree than other types of tubing. Its uniform temper assures trouble-free fabrication.

EXTRA FLEXIBILITY

Viking Copper Tube is soft and pliable, yet exceedingly rugged. It saves time and labor because it can be coiled, formed, flared and expanded quickly without danger of fracturing or splitting.

CLEAN AND DRY

Viking Copper Tube is triple-sealed at the ends, stays dry and absolutely dirt-free. The seal is made to pass through any opening large enough for the tube itself. It's clean ... it's bright ... it's dry!

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reg. U.S. Pat.
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Est. 1926

AIR CONDITIONING
& REFRIGERATION **NEWS**

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'The Conscience of the Industry'

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SOME SERVICEMEN 'ARMED BANDITS'?

Xenia, Ohio

Editor:

I haven't been a subscriber for decades like some of those who write in, only about six years. But I know there isn't any man anywhere who enjoys the NEWS more than I do. Every Monday night from front to back is a must for me.

I've got a thing or two on my chest that I haven't seen anything wrote about recently.

There has been a lot of talk about Honesty in Manufacturers ratings. Honesty is what I want to talk about, but on a much lower scale, which I think is just as important.

I imagine I service about as much equipment as any serviceman in the industry and within our industry I find one great big confidence game. It operates as smooth as silk right under our very noses.

This game is worked by servicemen or "so called" servicemen.

Just this week I counted almost Fifty Dollars worth of

parts that had been replaced in one store alone that operate as good as new. One part the Grocer had been charged for was never put on the job.

It's hard enough to keep the good will of a customer under the best conditions even when he has to pay only once.

I find more of this coming from independent men for some reason. I usually get into these jobs when the Grocers has threw up his hands and swears he can't stand any more.

It's amazing how I find equipment operating, and the Grocer says I didn't know it would work any better. My old serviceman said that is the best it will do.

To me this is worse than armed robbery. The Bandit is armed for sure. With a tool kit and parts for sale.

I hope we don't have very many Thieves within our ranks and I hope we can weed them out so we can carry our heads high.

So, I ask kind Sir if we don't clean our own house, who will clean it for us. Thanks so much for the shoulder.

RDP

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Keep up-to-date on what's going on in your industry. You'll see action weekly in AIR CONDITIONING & REFRIGERATION NEWS. Covers latest news and gives you top how-to-do-it reports on commercial and residential air conditioning, commercial and home refrigeration: manufacturing, contracting, distributing, retailing, and servicing. Read the Industry's newspaper for profit every week. Only \$6.00 per year, 52 issues (U.S. and Canada). Foreign: \$10.00 per year.

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They'll
Do It
Every
Time

by

Jimmy
Hatlo



Rekindling Dealer Interest In Commercial 'Package' Air Conditioners

Our industry can be proud of its commercial "package" air conditioning equipment. However, manufacturers occasionally complain that commercial air conditioning doesn't get proper emphasis at the distributing level.

Problems: (a) to rekindle interest on the part of contractors and dealers in this phase of their business; (b) recruit additional commercial refrigeration and air conditioning specialists in weak areas.

Both of these problems can be solved at relatively small cost. How? Through dealer promotion. *Sell dealers on the desirability and profitability of these products!*

To attract more customers who stay longer and buy more, air conditioning is a must for stores and service shops.

In spite of nearly universal agreement to this proposition, the market saturation on commercial and industrial air conditioning installations hovers close to a surprising nationwide low of 21%. Even with the large volume of sales during the past few years, installations have done little more than keep pace with new construction in the commercial and industrial field.

Believe it or not, less than 40% of new commercial construction is being air conditioned currently. And the big backlog of small-town establishments, not yet air conditioned, is a real challenge.

Packaged units dominate this business, for obvious reasons. Probably more than 90% of commercial installations are of this type. Chief advantages: portability, elimination of building alterations, faster installations, and (in some cases) unit-by-unit purchase to spread the total cost over a longer period.

Major benefits of commercial air conditioning:

1. It brings in more customers.
2. The customers stay longer and buy more.
3. Employee turnover is reduced, and efficiency is improved.

We can be or become wise in all matters of secondary importance, but we have to be resigned to utter ignorance in the most important respect: we cannot have any knowledge regarding the ultimate principles of our choices, i.e., regarding their soundness or unsoundness; our ultimate principles have no other support than our arbitrary and blind preferences. We are then in the position of beings who are sane and sober when engaged in trivial business and who gamble like madmen when confronted with serious issues—retail sanity and wholesale madness.—LEO STRAUSS.

4. The shelf life of perishable foods is lengthened.

5. Prestige factor.

6. Cleanliness (thanks to filtered air) cuts clean-up time.

7. Reduction of odors is appreciated by customers and personnel.

Today only 15% of Class A office space is air conditioned. Yet, in city after city, office air conditioning is moving from the luxury category to that of necessity.

In New York 60 major new office buildings constructed in the past 10 years have air conditioning. But it is estimated that there still exist 600 to 700 million sq. ft. of office space to be air conditioned. Probable total cost of this job: about \$3 billion.

Quick glimpses of this city market:

Houston	100%	Class "a" office space ac-d
New York	22%	" " " " " "
Philadelphia	18%	" " " " " "
Chicago	17%	" " " " " "

It will take another \$2.5 billion to air condition existing hotels. Hilton Hotels now are leading the way. Newest hotels in this chain to contract for air conditioning are three in New York, the Statler, Waldorf-Astoria, and the New Yorker. Others will follow.

A recent survey of hotel and motel owners in Florida showed that 7,000 of them plan to add air conditioning this year.

At the rate non-residential construction continues, this saturation figure may not gain appreciably. For example, the total commercial and industrial air conditioning installed in 1956 equaled only 38.6% of the amount necessary to equip new building construction alone.

What a business! What a future! We're telling contractor-dealers here and now that they should plug it vigorously now and henceforth. Alert manufacturers no doubt will elevate their sights, too, and bang away at this inviting target through stepped up dealer promotion.

A black and white portrait of Betty Furness, a woman with short, dark, wavy hair, looking slightly to the right with a subtle smile. She is wearing a light-colored, possibly white, collared shirt or jacket. The portrait is positioned on the left side of the advertisement, partially overlapping the text area.

BETTY FURNESS SAYS:

**“Get ready for the
2 Biggest Sales-
Building Ideas
in Air Conditioning!”**

Now Westinghouse Opens Your Way
To More Home Prospects — More
Commercial Prospects — More
Air Conditioning Sales With 2
Great New Concepts.

YOU CAN BE SURE...IF IT'S **Westinghouse**

See What's New from

INTRODUCING THE LEADERS OF



MATCH-MASTER Units to Sell to Every Home

MATCH every home size—exactly . . .
MASTER your local weather!



BEAT HEAT!



CONTROL HUMIDITY!



SELL SOLID COMFORT!

NOW—16 Combinations to Master the Heat and Humidity where you sell!

It's new! It's a whole new way for you to sell complete home air conditioning! Westinghouse presents *air-cooled* MATCH-MASTER home air conditioners. This new concept in air conditioning is designed to MASTER heat and humidity where you sell and MATCH every home you sell to.

Westinghouse engineers have developed the exact, readily-interchangeable combinations of coils, "*Whisper Quiet*" compressors and other components to let you *prescribe* air conditioning for your customers that MASTERS their local weather. The Westinghouse MATCH-MASTER line is available in 16 combinations so that you can "tailor" each installation exactly to MATCH each customer's heat load.

What does this mean to you? Plenty!

1. 16 sizes between 18,000 BTU's per hour and 70,000 BTU's per hour.

2. Combinations for dry-heat areas; combinations for wet-heat areas.

3. A tool to beat the keenest price competition by selling EXACTLY what the job needs, not having to supply a larger-than-needed unit.

4. Easy correction for too-tight heat load calculation: even after installation you can interchange sections of Westinghouse Match-Master Units and raise cooling capacity.

5. Solves commonest application headache problems such as "too weak" furnace fans.

6. These new Westinghouse units have been carefully and scientifically engineered for quietness. New compressor design and noise-proof housing make Westinghouse air conditioners as quiet as any on the market.

WESTINGHOUSE!

THE 1957 MASTER-MATCHED LINE



STYLE-MASTER

Commercial Units

Designed to Custom Match *any* interior!



Decorator Color Styling —harmonizing trim!

Now you can offer every commercial customer Westinghouse-engineered air conditioning that's **STYLE-MATCHED** to the interior of his place of business! You can sell famous Westinghouse quality air conditioning "wrapped" in the widest range of cabinet stylings and colors ever. There's no interior decor you can't match or supply harmonizing contrast for . . . and there is no customer who can put you off with "It won't match my

interior decorating scheme."

Get the whole story about **STYLE-MASTER** Air Conditioners for commercial applications from your Westinghouse Distributor. For the name of your nearest Westinghouse Distributor, write: Westinghouse Air Conditioning, P.O. Box 510, Staunton, Va. — or phone Staunton 6-0711.



STORES!



RESTAURANTS!



EVERY BUSINESS!

Look at the Impact-Loaded Sales Help You Get



HOMEOWNERS AND BUSINESSMEN IN YOUR TOWN WILL...

SEE—READ—HEAR!

The most exciting *announcement* in air conditioning for 1957 . . .

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New Homes Guide
Local Newspapers

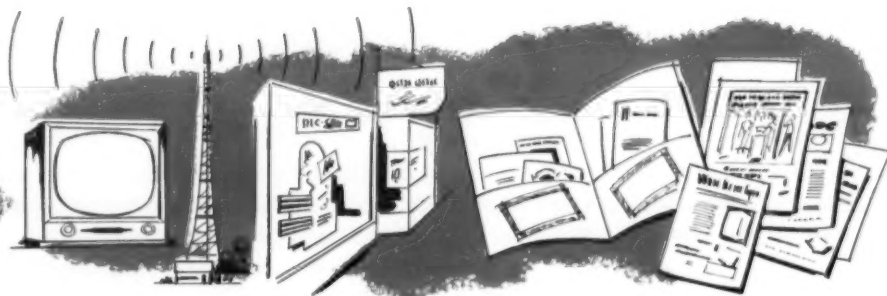
on TV's Studio One
Local Television
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National Advertising that's loaded with sales impact!



You'll have the help of a tremendous program of national advertising — in magazines your customers read, commercials on "Studio One" — America's best-selling dramatic TV show — and many more!

PLUS More help from material like this designed for your area!



Localized Newspaper Advertising!
Localized TV Spots!

Localized Radio!
Display Materials!

Complete Ad Kit!

Get
the
BIG
STORY
Now!

Westinghouse Electric Corporation
Air Conditioning Division
Dept. AR-1, Staunton, Virginia

- ☐ Please send me full information on MATCH-MASTER and STYLE-MASTER air conditioning units.
☐ I would like to see and hear more about these 2 great new lines. Please tell me the name of your nearest distributor or sales representative.

Name.....

Business Name.....

Address.....

City.....Zone.....State.....

☐ Distributor

☐ Dealer

YOU CAN BE SURE...IF IT'S

Westinghouse

Preview

Many New Products To Make Spectacular Debut At International Heating, Conditioning Show

Continental Filter

"Dycon," the adhesive-free synthetic filter media which needs "only occasional cold-water rinsing," will get the emphasis in Continental Air Filters, Inc. booth 1133 at the show, the firm announced.

Stressing the "just rinse and reuse" slogan, Dycon unit filters will be shown in 1, 4, and 8-in. deep-bed types, it was explained. Plastic panels on one of the company's self-cleaning automatic air filters will enable visitors to see operating features in action. Also represented will be Continental's viscous impingement unit filters, both of "E-Z Wash" and low-velocity screen-wire types.

Buensod-Stacey

Featured in the Buensod-Stacey, Inc. booth will be the firm's newest automatic flow control air mixing unit.

Known as the V3, the dual-duct unit will soon be available with both galvanized steel and aluminum casings, the company pointed out.

Fraser & Johnston

To be dramatized in booths 226 and 228 by Fraser & Johnston Co. will be an "exploded" model of an upflow closet type furnace, two horizontal units, a counterflow furnace, an air conditioning condensing unit, two coils, and a lo-boy furnace.

The firm has just finished its greatest volume year and plans to emphasize that fact in their presentation, it was further announced.

National Heater

A life-size cutaway photomural model of its "Champion" direct-fired heater, illustrating six basic points, will be the focus of the National Heater Co. display at the show.

In addition, three different models of National Champion heaters will also be on display in booth 1137, it was announced. The full line of heaters will be featured, including vertical floor models, portable floor models, inverted

units, vertical models with side blowers, and horizontal ceiling suspended units, the company said.

Insto-Gas

To be demonstrated in booth N412 by Insto-Gas Corp. will be the firm's regular line of torches, furnaces, internally-fired soldering iron torch, "Insto-Hot" salamanders, and Insto-Hot infrared heaters, the company announced.

Automatic Devices

Featured in the Automatic Devices Co., Inc. booth will be a new "Weather-Reset" time switch called "Weather-Chron" regulator, the company said.

Large working model of this unit, showing how the time of

switching action is automatically changed as outdoor temperatures change, will be exhibited. Panel in relief will be included, indicating the application of the unit when used with ordinary room thermostats, with zone controls, or with outdoor-type building heat controls, it was explained.

"Weather-Man" and "Weather-Flo" regulators will also be presented.

Calgon Co.

Calgon Co., Div. of Hagan Chemicals & Controls, Inc. will emphasize its air conditioning products in booth N339, it was announced.

Main products to be featured include scale remover, used to remove scale from cooling tower systems and evaporative condensers, "Micromet" plates used to keep the system clean after scale is removed, and "Algaecide," used to control algae and slime growth in cooling tower systems, it was noted. Other items to be shown are boiler water treatment and "Banox W.T."

Cyclotherm

Cyclotherm Div., National-U. S. Radiator Corp. will display representative models of its package steam generating equipment in booth 551 at the show.

Feature attraction will be model CW-21, a 2,000 MBH hot water boiler, typical of a new line ranging in capacity from 700 to 7,000 MBH, the firm said. Designed specifically for forced hot water heating systems, these boilers are said to overcome critical temperature differentials.

Also, model C-2800, 80 BHP package steam generator for use with heavy oil or gas firing will be another feature, it was noted.

Armstrong Machine

Featured in the Armstrong Machine Works booths 1158 and 1160 will be the "Humid-I-Maker," a domestic humidifier.

Designed to meet the need for a high-capacity humidifier for hot-water-heated homes, Humid-I-Maker has a capacity with 120° boiler water of 6 lbs. of moisture

per hour, or with 180° water, 19.8 lbs. an hour, the firm said.

In addition, the company will exhibit its "Temperature Control" system for hot-water-heated homes and vent traps for water systems. Armstrong steam traps and pipe line strainers will be shown with a glass-bodied trap in operation at 7 lbs. steam pressure.

General Filters

Complete line of fuel oil filters for both light and heavy fuel oils, warm air humidifiers, soot remover for heating plants, and water traps for oil tanks will be exhibited in booth 916 by General Filters, Inc.

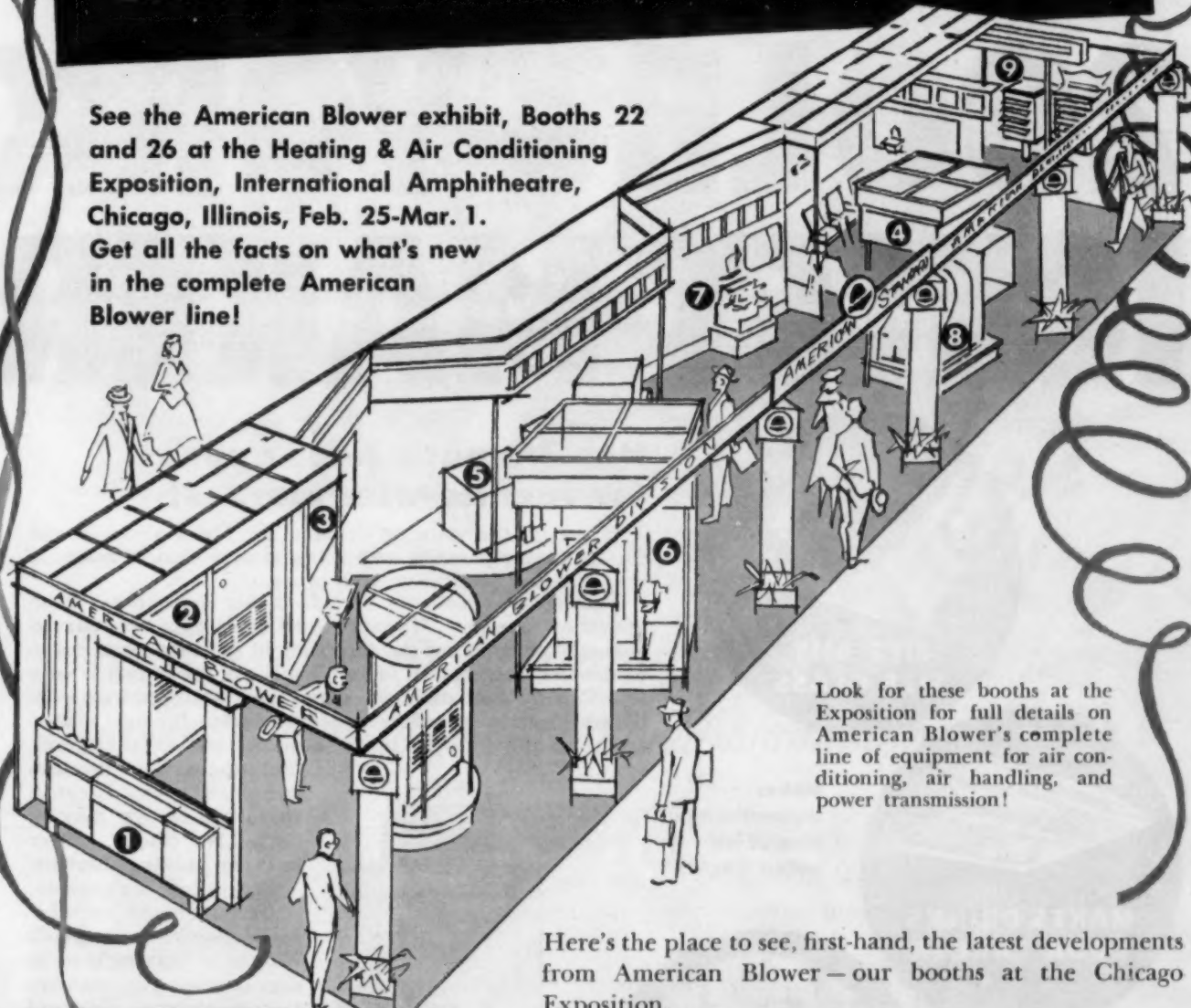
Ridge Tool

Ridge Tool Co.'s center of attention in booths 665, 667, and 669 will be its new 4 PJ 2½-in. to 4-in. geared pipe threader equipped with automatic jam-proof kick-out.

The complete line of pipe tools will be on display, including wrenches, cutters, reamers, vises, threaders, pipe and bolt threading machines, and new tubing cutters.

Come visit us at the Exposition!

See the American Blower exhibit, Booths 22 and 26 at the Heating & Air Conditioning Exposition, International Amphitheatre, Chicago, Illinois, Feb. 25-Mar. 1. Get all the facts on what's new in the complete American Blower line!



Look for these booths at the Exposition for full details on American Blower's complete line of equipment for air conditioning, air handling, and power transmission!

Here's the place to see, first-hand, the latest developments from American Blower—our booths at the Chicago Exposition.

You'll find a display on Tonrac, our new centrifugal refrigeration machine that installs on a single level. You'll see our completely new line of comfort-engineered packaged air conditioners, the latest Gyrol Fluid Drive, high-pressure fan, utility set, unit heater, and much, much more.

And there'll be motion pictures, moving displays, fact-filled literature—everything to make your visit interesting and informative. So make a note now to stop by! American Blower Division of American-Standard, Detroit 32, Michigan. In Canada: Canadian Sirocco products.

AMERICAN BLOWER

Division of AMERICAN-STANDARD



MASTER

EVERLAST - R.C. - FILTER



Cut to Fit
Filter for
all Room
A.C. Units

- one size for all units
- just cut to fit
- flexible edges seal
- no leaks at edges
- efficient and long lasting
- wash to clean
- cuts easily with shears
- fits snugly
- low inventory costs
- filtering media curled Karatin set in rubber
- packed in cellophane

LOW COST—DISCOUNT

MASTER PRODUCTS COMPANY

7000 S. Wentworth, Chicago, Ill.

Here are some of the things you'll see!

- 1 Unit Conditioners—designed to provide year-round air conditioning on an individual-room basis.
- 2 American Blower Packaged Air Conditioners—modern styling, engineered for industrial and commercial applications.
- 3 Tonrac centrifugal refrigeration machines that maintain chilled-water temperature regardless of load.
- 4 Ventura Fans—propeller fans, with streamlined inlets, for general ventilation in commercial applications.
- 5 Air-Conditioning Units—components for central station air-conditioning systems.
- 6 Sirocco High-Pressure Fans, for high-velocity direct air-conditioning systems and industrial applications.
- 7 GYROL® Fluid Drives for smooth power and adjustable-speed control in a wide variety of industrial applications.
- 8 Utility Sets—self-contained fan units for general supply or exhaust where duct work is required.
- 9 Unit Heaters—horizontal and vertical models for use with steam or hot water, plus gas-fired heaters.

*Trademark



THOUGH snowing outside this Grand Rapids, Mich. supermarket air curtain door, model stands inside in perfect comfort. Conditioned air, blown from above, is drawn into a floor grating forming the curtain which keeps out cold, dust, insects, cats, and dogs. Manufacturer American Air Curtain Corp. of St. Louis discloses it will soon open the first three department store air curtain entrances, one 12, the other two 18 ft. where both heating and cooling of the curtain air is incorporated.

Preview

Manufacturers' Staffs To Answer Questions, Offer New Product Demonstrations at Show

Hastings

Hastings Air Conditioning Co. will highlight its chilled water air conditioning equipment in floor models, suspended units, and package coils at the show, it was announced.

Other items to be featured are a combination water and "Freon" coil conditioner, suspended unit heater of fan, blower, and duct type, forced combustion burners, portable cleaning and washing equipment, and a portable hoist designed to lift air conditioning equipment, it was added.

Flexonics

The "Flexon Man" garbed in high hat and monocle, an 18-in. figure constructed of flexible metal hose and fittings, will greet visitors

to the Flexonics Corp. exhibit.

Slated for booth 1107, Flexonics will show a complete line of flexible components for air conditioning, refrigeration, and heating industries, the firm said. Motion displays will lead the company's exhibit.

Johns-Manville

Johns-Manville Co. will display in booth 533 materials such as "Fibrocel" insulation, "Transite" air duct, and "Spintex" home insulation, the company announced.

Penn Furnace

Pennsylvania Furnace & Iron Co. will highlight its new line of series 3 and 6 "Pennco" gas-fired boilers, the company announced.

Series 3 units will include inter-

changeable casing enclosures for standard and deluxe, water, vapor, and steam boilers. New series 6 boilers will show such features as the completely assembled, all-steel base, and new removable access doors.

In addition to the vertical type diverter, the company will show its new horizontal type, it was added. A new method of assembly of sections has been provided, the firm noted.

The exhibit will include the firm's air or water-cooled cooling units, gas-fired furnace, conversion burner, and multitube burner, it was added.

Gustin-Bacon

Gustin-Bacon Mfg. Co. will spotlight its glass fiber insulation products for heating, ventilating, and air conditioning duct systems.

Featured product will be a new circular duct system molded from fine glass fibers for central attic installed cooling units, it was explained. In addition, G-B will exhibit its "Snap-On" pipe insulation, "Ultralite" and "Ultrafine" duct insulation and liner.

Refrigeration Engr.

Refrigeration Engineering, Inc. (Recold) will center attention in booths N506 and N507 on the Great Lakes steamer fan—"Grandfather of Modern Air Conditioning"—from the Recold Museum, it was announced.

This unit operates from the flame of a kerosene lamp, Recold said.

For contrast, according to the company, a 3.3-sq. ft. face area multi-zone air conditioner and a huge 40-sq. ft. face area unit will be shown. Also on display will be the "Crosley Icyball" freezer, the farm freezer in use before electricity. And for contrast, Recold's new "cool vapor" defrost unit and a "Dri-Fan" evaporative condenser will be exhibited, the company disclosed.

J. F. Pritchard

Highlight of the J. F. Pritchard & Co. exhibit will be a full-size "LoLine" cooling tower, the company announced.

Specifically developed to provide economical water cooling for industrial processes and air conditioning, the LoLine offers a low silhouette and freedom in use and location of water-cooling equipment, it was added.

Lima Register

Two new items for air conditioning and heating will be featured in the Lima Register Co.'s booth 316, the company stated.

Series 72 "Super Extended" baseboard diffusers with automatic pushbutton damper will be on display. In addition, the firm will exhibit its new series 15 horizontal and vertical grilles available in 113 sizes for return air, ventilating, and cooling systems.

It's a new profit front opened by YORK

200 LB YORK ICELET MAKER



FITS ANY
SIZE GLASS

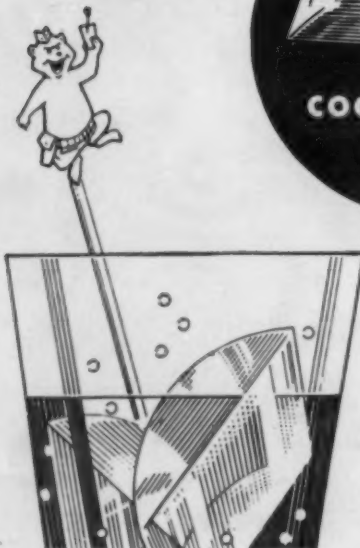


MAKES DRINKS
LOOK LARGER

Makes
distinctive new
kind of ice
called ICELETS



COOLS DRINKS
FASTER



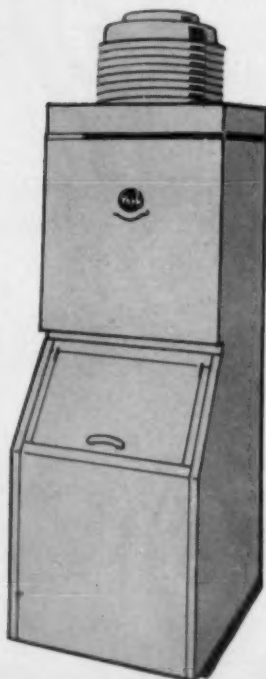
Has dramatic sales appeal for vast ice-user market!

York meets the growing demand for Ice Makers in the 200-lb. capacity range with a brand new kind of machine that makes a brand new kind of ice.

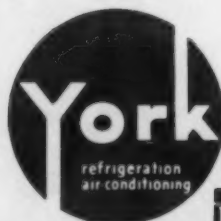
This newest automatic York Icemaker is *easy to sell* when you show the new "Icelets" with their gleaming curved shape. You can point out how they fit any size glass, make drinks look larger, cool faster. The York Ice Maker is *easy to install* by just making electric and water connections. Solves location and floor space problems because it's so compact: only 24" wide by 18" deep. Air cooled for economical operation. Requires *minimum service* because there are so few moving parts. No chains, cutter bars, or knives...hermetically sealed compressor.

Nets you bigger profit because you keep the profit instead of burning it up in service calls and installation problems. Contact your YORK Distributor now for the profit chance of a lifetime.

Nets you bigger profit because you keep the profit instead of burning it up in service calls and installation problems. Contact your YORK Distributor now for the profit chance of a lifetime.



York—the quality name
in air conditioning
and refrigeration



Your FUTURE and FORTUNE
Now Lies With York!

YORK CORPORATION, YORK, PA., Subsidiary of Borg-Warner



E-Z-SEE

SPRING
COMPENSATED!
LIQUID INDICATORS

E-Z-SEE Liquid Indicators with spring-compensated gas-gaskets are positively leak-proof—proved by hundreds of thousands now in use. Suitable for Freon-12 and Freon-22 at pressures of 500 psi.

AVAILABLE TO THE TRADE THROUGH WHOLESALEERS EVERYWHERE

REMCO INC.
ZELIENOPLE, PA.

Preview

Parts, Components Manufacturers To Introduce Items In Expanding Heating, Cooling Field

Edwin L. Wiegand

Edwin L. Wiegand Co. will introduce its "Chromalox All-Electric" unit for ventilating, electric heating, and natural cooling of schools in its booth, it was announced.

Other new Chromalox residential and commercial electric space heating equipment will also be displayed.

Introduction of this new equipment permits one manufacturer to be fully responsible for thermal conditioning, electrically, of entire schools, churches, motels, etc., the company claims.

Duro-Dyne

Duro-Dyne Corp. will feature a completely redesigned "Vane Rail" for use in the fabrication of air turning vanes for square elbows plus its IA-22 insulation adhesive for attaching insulation to ductwork, in booths 540-542.

Included in the exhibit will be the firm's standard line of P-K damper regulators, quadrants and accessories, hand punches, solder iron handles, portable spotwelder, and the "Neva-Bind" blade kit. Besides, the full line of flexible connector materials will be displayed, the company noted.

Air-Factors

Air-Factors, Inc. will exhibit for the first time in booth N224. The display will be concentrated on engineered air distribution products, the company said.

Emphasis will be placed on the "ACD" air curtain diffuser, B60 ceiling unit, and "LCF" sidewall model. To be introduced is the "MO-MJ" ceiling diffuser, a multi-orifice, multi-jet unit for installation in tile ceilings.

J. V. Patten

J. V. Patten Co. will display in booth 845 the firm's air and water-cooled residential and commercial air conditioning equipment.

In addition, oil and gas-fired warm air furnaces will be shown, the company announced.

A. M. Byers

A. M. Byers Co. exhibit in booth 755 will include description of the steps in the making of corrosion resistant wrought iron, and application photographs describing the many corrosive services in the air conditioning and heating field which are protected by wrought iron.

Wrought iron pipe, both black and galvanized, as well as plate, nipples, and welding fittings of wrought iron, will be displayed.

Visitors will be invited to guess the service life of a piece of wrought iron pipe removed from an installation after many years of service. Cash prizes will be awarded.

Conco Engineering

Representative units of Conco Engineering Works Heating & Air Conditioning Div.'s residential heating and air conditioning equipment will be on display in booth 1214.

The line includes heating units for firing with gas or oil, in a variety of types and sizes, it was noted. Companion summer air conditioning units are available for each of the heating units in a choice of either air or water-cooled condensers.

Two new Conco units—the "Modulux" and "Low Boy" fur-

nace—will be shown for the first time. Modulux is a year-round air conditioner incorporating face and by-pass dampers for modulation of air temperatures during both heating and cooling, it was explained.

Ilg Electric

Ilg Electric Ventilating Co. will occupy adjoining booths 1037 and 1041 to house a new display made specifically for this show.

Ilg will introduce its new "BC Airfoil" centrifugal fans and the new "LSQ" power roof ventilator.

Other products to be shown include high and low-speed propeller fans, explosion-proof fans, steam, gas, and electric unit heaters, home cooling fans, kitchen ventilators, centrifugal fans, and power roof ventilators.

New York Blower

New York Blower Co. will display a variety of products in booths 325 and 327, among them new "Recirculair" and make-up air units. Each functional section of these units can be installed and removed separately.

Other features of the exhibit will be a heavy-duty class III centrifugal fan suitable for high-pressure air conditioning systems, general purpose fan, new "Bell-Ex" and "VP-Ex" power roof ventilators, and some wholesaler items such as wall propeller fans, centrifugal fans, and unit heaters.

Warren Webster

Covering booths 706, 708, and 710, the Warren Webster & Co. display will prominently feature all its main lines of heating and air conditioning equipment, it was announced.

Outstanding attention will be given the "Newport All-Year" air conditioner, it was added. A completely new cool air system for residential installations using Web-

ster baseboard for heating will also be shown.

Center of the exhibit will be "Tru-Perimeter" heating featuring an all-new baseboard. "Walvector" and "Custom Walvector" will also be displayed in addition to steam specialties and propeller fan unit heaters, it was explained.

Viking Air Products

"Back to college" will be the general theme of the Viking Air Products booth 549. The Viking College of Blower-Humidifier Knowledge will conduct a quick quiz open to all spectators. Humorous degrees will be awarded.

Divided into two courses, the college will feature information designed primarily for furnace makers, and humidifier information for humidifier dealers, it was noted.

The "first interchangeable blower" together with the "Mark III" bearing will be shown. Besides, the company's "Universal" and stationary mount blowers, and "Aqua-Magic" humidifier will be displayed.

Century Electric

Century Electric Co.'s new "Industrial Quality" 48-frame motor line including cutaway models will highlight that firm's display in booth 855, the manufacturer announced.

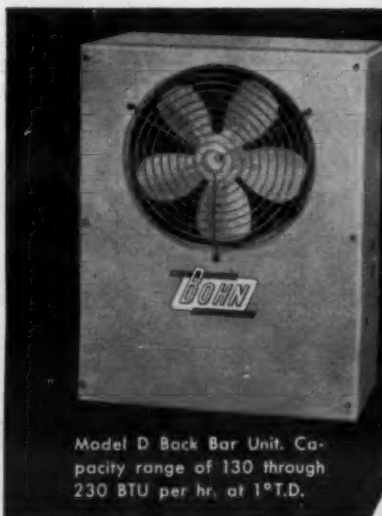
A special exhibit unit containing a Century rated integral horsepower motor will be offered. Frames are redesigned for indoor or outdoor installation. A demonstration unit showing the way the company's split capacitor motors are designed will also be featured, it was said.

Wayne Home Equipment

Two new oil burners with capacity ratings adjustable from 3 to 7 g.p.h. and 7 to 16 g.p.h. respectively will be introduced as the highlight of Wayne Home Equipment Co., Inc.'s display in booth 1169.

Also to be shown is the Wayne model OE for ratings from 0.6 to 3.0 g.p.h., the company further said.

BOHN Presents



Model D Back Bar Unit. Capacity range of 130 through 230 BTU per hr. at 1° F.D.



Model UC Unit Cooler. Capacity range of 260 through 2000 BTU per hr. at 1° F.D.

Model HR Half Round. Capacity range from 260 through 1080 BTU per hr. at 1° F.D.

the NEW ANGLE in Commercial Refrigeration

rugged • lightweight • grained aluminum cabinets

The NEW ANGLE is better refrigeration equipment than ever before . . . at low cost . . . backed by BOHN quality and service.

- No Scratch
- No Rust
- No Paint

Outstanding features include grained aluminum cabinets . . . rust proof fittings . . . full collar aluminum fins and copper tubing . . . reliable BOHN capacity ratings . . . life lubricated motors.

The new Model D is the ideal universal unit for all types and sizes of back bars. Model UC features built-in liquid distributor and patented air direction louvers. Model HR features a quick cleaning filter, a double drip hinged pan which prevents sweating, and air direction louvers formed in the fins.

Be sure of fine construction and economy. Write today for complete details on these and other models. Reserve your free copy of the new BOHN CATALOG BU-1.



Manufacturers of Commercial Refrigeration, Industrial Air Conditioning and Special Heat Transfer Surface

BOHN ALUMINUM & BRASS CORPORATION • BETZ DIVISION • DANVILLE, ILLINOIS

See Our Exhibit in Chicago at this Year's International Heating & Air Conditioning Exposition, Feb. 25-March 1.

For more information about products advertised on this page use Information Center, page 42.

Preview

Visitors Will See Many 'Firsts' In Exhibits As 1957 Heating, Air Conditioning Lines Bow

Sarcotherm Controls

Sarco-Sarcotherm Controls, Inc. will feature the "Power-Pac" electrically operated motorized valve mounted on a panel indicating actual operating forces of this unit, the company announced.

Capable of operating valves from 1/2 to 8-in. size with force of over 500 lbs., this unit has internal mechanism completely self-contained in a sealed unit. Actuator will operate in any position and the unit can be fitted with linkage as damper operator, it was noted.

Another main panel in the booth will feature the Sarcotherm "Outdoor Compensated" weather controls for both steam and hot water heating.

The exhibit will be rounded out with a showing of the firm's complete line of heating specialties.

Slant-Fin

Slant-Fin Radiator Corp. will use its exhibit in booth 439 to display new additions to its line of commercial and residential finned tube radiator products, it was announced.

For home heating, Slant-Fin will show a new 3/4-in. baseboard radiator which has a "Track Expansion Clip" to do away with friction noise, and its "Steel-Pak" baseboard unit developed primarily for steam heating uses.

Type "J" commercial enclosures have been added to the line and will be displayed. Heating elements fabricated in special metals for greenhouses and special process heating will also be shown, it was added.

Sundstrand Hydraulic

First heating and air conditioning show appearance of the Sundstrand truck refrigeration drive will highlight the exhibit of Sundstrand Hydraulic, a division of Sundstrand Machine Tool Co., it was announced.

Cutaway models of the drive, which incorporates pump, oil reservoir, and fluid motor, will be on display in spaces 617 and 619.

Also to be shown are three fuel unit models—one and two-stage high-pressure types and a low-pressure air-oil type.

Temco, Inc.

Temco, Inc. has made a number of product improvements in its gas heating equipment line which will be displayed at the show. In addition, the air conditioning units now include 2 and 4-hp. self-contained multi-zone equipment with pre-fab ductwork.

Central feature of the booth will be the introduction of a built-in draft relief on the wall heaters and use of diffusion-type blower assembly in the space heater line, the firm explains.

Thermo-Products

Thermo-Products, Inc. plans to feature its line of oil-fired "Lo-Boy" basement furnaces with two sides cutaway and interior lighted in booth N324, it was announced.

A gas burner will be featured with this unit to demonstrate sim-

plicity of interchangeability. In addition, another focal point will be a horizontal oil-fired furnace with summer air conditioning attached. A counterflow gas-fired unit and a boiler will be other items shown.

Tuthill Pump

Tuthill Pump Co. will highlight its new type SU pump units in booth N-438. These improved units are designed principally for handling heavy fuel oils in industrial and commercial oil burners and for movement of non-corrosive, highly viscous liquid with lubricating qualities, the company said.

Also featured will be a complete line of pumps used throughout the heating and air conditioning industries, it was added.

Radex Corp.

An entirely "new principle" of electrostatic precipitation will be center of Radex Corp.'s exhibit at the show.

"Dustronic" air cleaners collect all coarse dirt and lint with a mechanical, washable filter before the air passes through collector plates, the company explained. Units are said not to require water or sewer connections and do not generate ozone.

Cambridge Filter

Topping the display in Cambridge Filter Corp.'s booth 409 will be standard and special models of the "Absolute" and "Aerosolve" lines of filters, the company announced.

A demonstrator will be on display to show efficiency of the filters with generated smoke and a bank of Aerosolve 6 by 8-ft. filters will be included in the exhibit, it was said.

Several new Absolute types will be on display for the first time.

Libbey-Owens-Ford

Libbey-Owens-Ford Glass Co. will emphasize "Thermopane" insulating glass importance in heating and air conditioning in its exhibit, it was announced.

Entitled "Don't Leave Holes In Your Insulation," LOF's display, in the form of a wall section containing a large Thermopane window, will point out that to have effective temperature control, windows as well as walls must be insulated.

Reliance Electric

Three new products will be shown for the first time in Reliance Electric & Engineering Co. booth at the show. They are: Reliance air-over motors, part-winding starting motors, and double-shaft pump motors, the firm said.

Also to be shown will be the Reeves variable-speed motor pulley for use on chain grate stokers, ventilating fans, and pumps. Reeves is a Reliance division.

Goodyear

A demonstration of the existence of electrostatic change in polyethylene filaments will be the feature of Goodyear Tire & Rubber Co.'s exhibit in booth 444 at the show, the company announced.

Electronic mechanisms will be used to show the dust trapping ability inherent in the chief ingredient of Goodyear's "Plotron" air filters.

Standard and heavy-duty filters will be employed in the exhibition experiments. An oscilloscope, amplifier, a.c.-d.c. interrupter, and a voltmeter will be used to show electrostatic properties of the material.

Jenn-Air

An animated simulated roof exhaustor, showing new stainless steel U-spring suspension, will be focal point of Jenn-Air Products Co., Inc. booth 928.

Also to be shown are centrifugal belt drive roof exhaustor, wall exhaustor, and axial roof exhaustor.

Warranted Two Years New Redmond Single-Bearing MonoMotor

INCORPORATES DESIGN PRINCIPLES NEVER BEFORE AVAILABLE IN FHP SINGLE- BEARING MOTORS

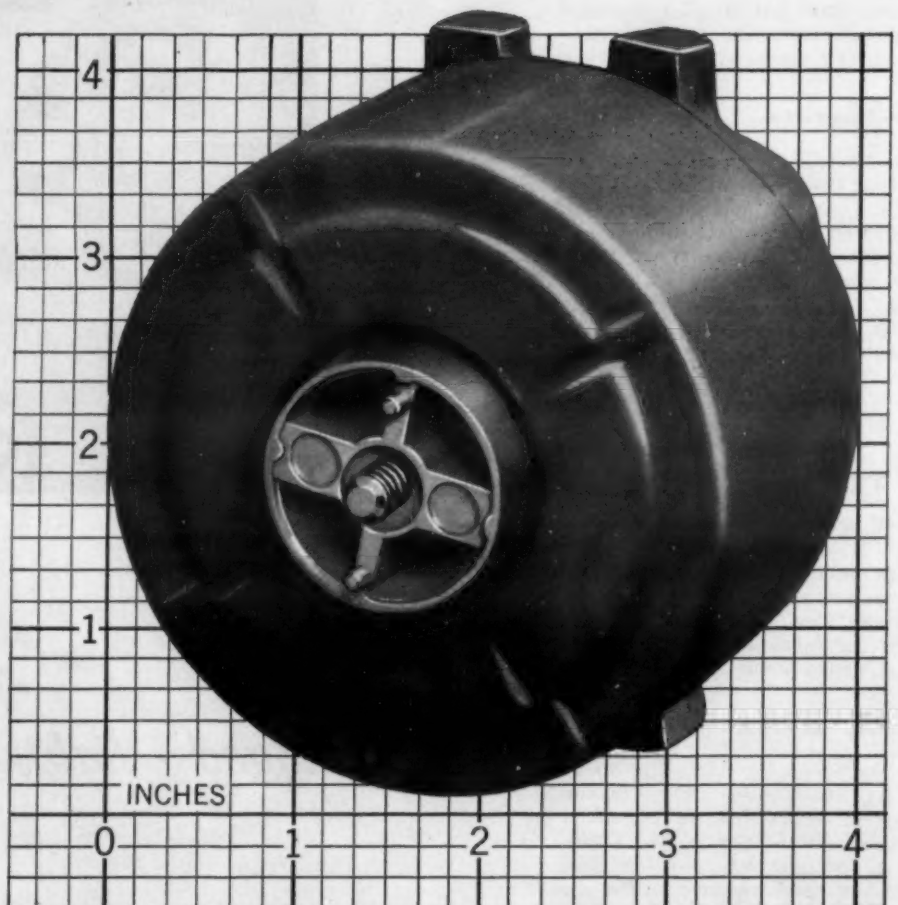
The Tri-Flux design, described and illustrated at the bottom of this page, is available only in Redmond small-diameter motors. This design adds a third area of magnetic flux which greatly increases the efficiency and starting and running torques of the AM-4 over conventional old style single-bearing motors.

Redmond's Uni-Cast construction allows the precision manufacturing that results in a motor that is smooth-running and quiet and can be depended on to give years of service-free performance. Exact bearing alignment, uniform air gap, and the elimination of magnetic wedges assure long life and whisper-quiet operation.

The AM-4 is guaranteed not to leak oil in all-angle use or in shipment. The new positive oiling system provides an extra large oil reservoir for lifetime lubrication. Positive oiling is achieved through the forced recirculation of the lubricant, which is completely suspended and uniformly distributed in pure wool and nylon wicks.

Made of a durable, lightweight metal, this new single-bearing motor is considerably lighter than conventional old style motors.

Designed for all-position mounting—vertical shaft up, shaft down, or any angle—and interchangeable to accommodate all standard brackets and special mounts, the AM-4 is adaptable to a wide variety of applications.



Designed Specifically for the Refrigeration and Air Conditioning Industries and Adaptable for a Wide Variety of Applications

The AM-4 is a 4-pole motor, 1550 r.p.m., 115 volts, 60 cycles. It is available in odd voltages and frequencies, and is rated at 1 1/2, 4, 6, 9, 12, and 16 watts.

1/4" external shaft diameter is projected in bearing to 5/16" for added strength. There are six lead outlets.

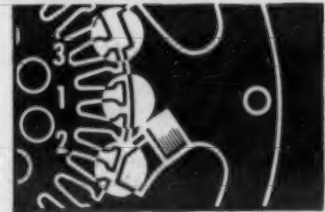
How Tri-Flux Design Improves Performance



The salient pole single phase induction motor has only one flux path—indicated by the white circle—between the field and the rotor. The motor is not self-starting—for commercial value a starting mechanism must be added.



The second white circle indicates the flux path added by wrapping a shading coil around the trailing pole tip. Power and uni-directional action are increased in this shaded pole induction motor, and it is now self-starting. This motor is now practical at low cost, and is used for applications requiring limited starting torque.



Note that a third flux path has been added at the leading pole tip. This was accomplished by Redmond's Tri-Flux design, whereby a "reluctance notch," which can be seen in the third white circle, is put in the leading pole tip. Efficiency and starting and running torques are greatly increased. New applications are opened to these improved, low-cost motors.

MARSH Instruments

THE SERVICEMAN LINE of Testing
Gauges, Testing Thermometers, Tim-
ers, etc.

PRESSURE GAUGES and Dial Ther-
mometers for all services.
MARSH-ELECTRIMATIC, Water Regu-
lating Valves, Solenoid Valves.

MARSH INSTRUMENT COMPANY
Solex Affiliate of Jos. P. Marsh Corporation
Dept. D., Skokie, Ill.

Preview

Major Attractions To Be Offered In Each Booth at the International Amphitheater

Eddington Metal

Eddington Metal Specialty Co. will exhibit primary items it makes for heating and air conditioning applications, it was announced.

Products to be shown include oil burner nozzles, air conditioning nozzles, fuel oil filters and strainers, burner combustion equipment, burner servicemen supplies, and automatic condensate disposal pumps for central air conditioning systems, ice machines, and coolers.

Bastian-Morley

On display in Bastian-Morley Co., Inc.'s booth N415 will be a cutaway model of the new "Basmor Unipak," a complete heating package which consists of a cast iron gas designed boiler, a circulator pump, pump relay, boiler airtrol

fitting, ASME relief valve, and all controls and electrical wiring.

In addition, Basmor gas-fired boilers, water heaters, and incinerators will be shown, the company said.

American Coils

Major attraction at the ACI American Coils booths 346 and 447 will be the latest model of the "ACI-H" heat pump, it was disclosed.

A water-to-air unit, the heat pump is available in 3 through 15 hp. in three-phase, 60 cycle, 220 v., and 3, 5, and 10 hp. in single phase.

Other products to be on display, the firm added, will be 3 to 15 hp. ACI air conditioners, ACI-T cooling towers in 3 to 60-ton capacity, and ACI-A 3 to 15-hp. packaged chillers.

Allis-Chalmers

Allis-Chalmers Mfg. Co. will display various units of its complete line of air conditioning pumps in booth N315 at the show, it was announced.

The firm's competent contractor, "Cool Carl," will be in evidence at the booth. Motors, control, and V-belt drive equipment will also be a part of the A-C display, including one and two-groove "Magi-Key" sheaves for quick speed adjustment of A and B section "Texrope" V-belt drives, it was pointed out.

Owens-Corning

Owens-Corning Fiberglas Corp. will feature the golden "Dust-Stop" air filter, Fiberglas prefabricated duct system, and Fiberglas low-pressure pipe insulation in its show booth.

Displayed in new golden, flexible pack and new four-filter "pak," the Dust-Stop filter will be main point of attention, the company said.



PRESIDING at installation of officers at the annual banquet and ladies' Night of the RACCA of New Jersey Contractors Association was executive vice president Ray Kromer of the national group. Front row, l. to r.: William P. Emley, retiring sergeant-at-arms; William J. Capo, retiring director; James M. Naughton, retiring president; Charles Edmond, incoming president; I. Monsen, incoming vice president; Al Diell, ladies' Night chairman and national director. Back row, l. to r.: John Sanok, past president; Ray Kromer; Saul Marder, incoming secretary and treasurer; Harold Rohloff, incoming sergeant-at-arms; Fred H. Young, executive secretary; and Edgar A. Donahue, legal counsel.

Phillips Drill

Visitors to the Phillips Drill Co. exhibit in booth N421 will be invited to try their skill at making time with a "Red Head"—a Phil-

lips Red Head self-drilling concrete fastener, that is.

A drilling contest will be conducted at the booth. The person who drills a Phillips Red Head into a concrete block in the fastest time every hour will be awarded a "Kwikit" hip-pocket helper. The fastest contestant for the entire show will receive a Red Head electric impact hammer.

"Miss Red Head," official hostess for the firm during the show, will award the prizes to the winners.

On display will be Phillips' complete line of concrete fastening devices and accessories.

Bett-Marr Mfg.

A new product of Bett-Marr Mfg. Co. will be shown for the first time in booth 773.

This new unit is a 24-in. cheek bender, featuring a two-way trunnion at the open end which gives a "perfect" bend and returns the bending bar to the starting position.

Also to be seen are the company's three-wheel band saw with 24-in. throat, and the two-wheel, 14-in. band saw.

Air & Refrigeration

Air & Refrigeration Corp. will highlight its new 60-ton "Articulated" air conditioning unit in booth 41, it was announced. This unit contains the complete air conditioning system from outside and return intakes with louvers and dampers, automatic filters, sprayed direct expansion coil dehumidifier, fan, and motor.

The compressor, receiver, evaporative condenser, all electrical switch gear, and controls also fit within the aluminum clad, weather-proof housing, it was noted.

U. S. Register

United State Register Co. will exhibit in booth 1036 its complete line of air conditioning registers and grilles, it was announced.

The 20-ft. long space will display panels showing the different types of registers and grilles.

for Customer Satisfaction Features All-Angle Operation

STANDARD AM-4 RATINGS

Totally Enclosed
Any Position Mounting

115V • 60 CYCLES • 4-POLE • 1550 RPM • ALL-ANGLE OPERATION

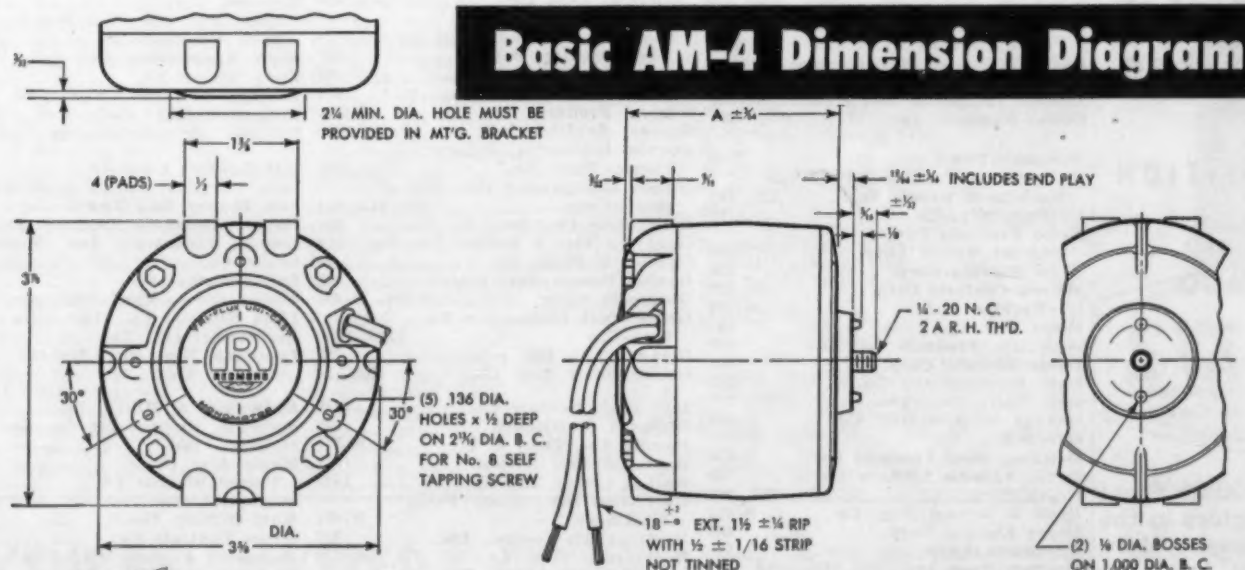
Model Number	Watts Output	AMPS	A $\pm \frac{3}{4}$	Hi Impedance Protected	Duty		Weight Lbs.-Oz.	Notes
					Fan	Mechanical		
*AM-4000J	1.5	.30	2 $\frac{3}{4}$	YES	YES	YES	2-2	1. All standard model numbers are clockwise rotation facing shaft end of motor. Opposite rotation supplied on request. 2. All motors comply with U. L. and C. S. A. electrical design standards.
*AM-4001J	4	.44	2 $\frac{3}{4}$	YES	YES	NO	2-2	
*AM-4200J	6	.46	2 $\frac{3}{4}$	YES	YES	YES	2-9	
*AM-4300J	9	.58	3 $\frac{1}{4}$	YES	YES	NO	3-1	
AM-4400A	12	.72	3 $\frac{3}{4}$	YES	YES	NO	3-9	
*AM-4401A	16	1.03	3 $\frac{3}{4}$	NO	YES	NO	3-9	

*May be operated on 50 cycles at 1300 RPM—Fan Duty—Hi-Impedance protected.
†Thermal protected.

OPTIONAL FEATURES

Motors are supplied standard as shown. Also available are other features of special stud extensions, sleeving over leads, other lead material, feed-thru switches, plugs, terminals, conduit clamps and special lubricant as required for exceedingly high and low ambient operation.

Other performance ratings for various voltages, frequencies and loads can be supplied for your product. Our sales engineers will welcome the opportunity to assist you in developing the most practical motor for your applications.



Send for Complete Performance Data

Write the Redmond Co., Owosso, Michigan, for the "AM-4 Bulletin." At your request we will have a sales engineer call.



ROTARY SEAL

Replacement Units

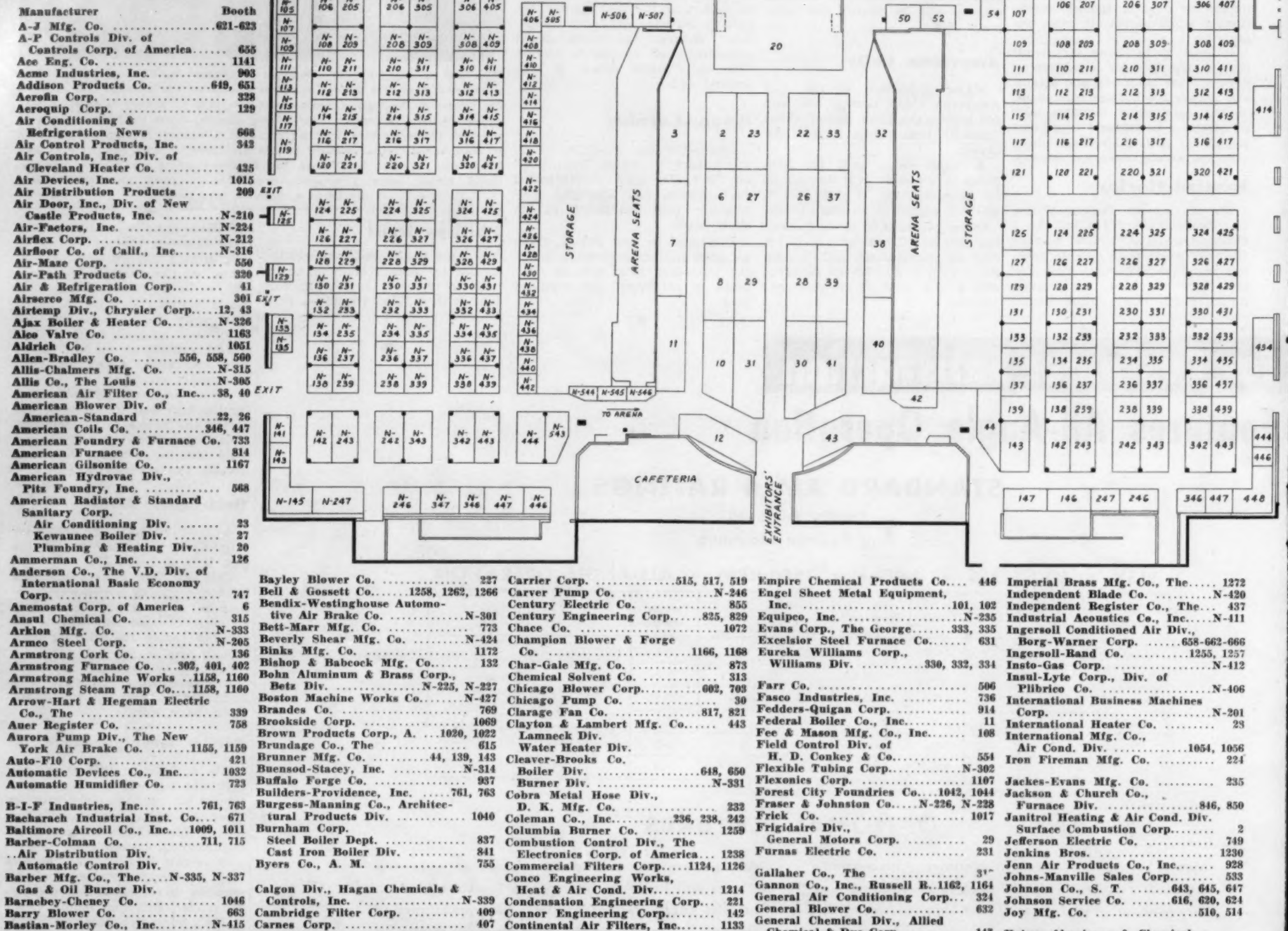
Available in a wide size range for Commercial, Semi-Commercial, Air Conditioning and Home Refrigerators.

EASY TO INSTALL • ECONOMICAL

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CHICAGO 14, ILLINOIS, U.S.A.

Floor Plan for Heating & Air Conditioning

Exhibitors, Booth
Numbers Will Help
Visitors Plan Tour



A PROFITABLE REMINDER
... Plan now to attend the

13th INTERNATIONAL HEATING & AIR-CONDITIONING EXPOSITION

(formerly the International Heating and Ventilating Exposition)

INTERNATIONAL AMPHITHEATRE—CHICAGO

February 25—March 1

Under the auspices of the American Society of Heating and Air-Conditioning Engineers, and in conjunction with their 63rd annual meeting.

AND WRITE NOW for advance registration—time flies! See, in less than five days, what's new for contractors in the heating, ventilating and air conditioning business. More than 450 leading manufacturers will show new products, new techniques—and new ideas that will build better business for you in the industrial, commercial and domestic fields.

You and your associates should plan now to attend. Write for advance registration to:

13th INTERNATIONAL HEATING & AIR-CONDITIONING EXPOSITION

480 Lexington Ave., New York 17, N. Y.

Management: International Exposition Co.

(Continued on next page)

DEXTER PARK AVENUE
(Concluded from preceding page)

701 S. Eighth St.
Los Angeles, Cal.
In Canada: STA-RITE

C. E. Buchholzer, president of Airtemp, and J. F. Knoff, vice president in charge of sales, participated in the opening.



701 S. Eighth Street, Delavan, Wisconsin
Los Angeles, Calif. • Chamblee, Ga.
In Canada: STA-RITE Pumps (Canada) Ltd., Ajax, Ont.

37

What's Going On in HEATING

News of Methods, Products, People

The California System

Stamp Plan Viewed as 'Best Bet' In the Highly-Competitive Heating, Cooling Field

LOS ANGELES—Support for the stamp plan "as a 'best bet' investment and a survival necessity in an over-competitive heating and air conditioning market" was urged by leaders at the first industry-wide meeting on promotion at the Carolina Pines restaurant.

An applause vote of support, without a single dissenting voice, was the reaction following talks by Robert N. Hall, newly-installed president of the Institute of Heating & Air Conditioning Industries, and William L. Hoyt, Jr., newly-appointed chairman of the speakers' and standards committees.

More than 150 manufacturer, supplier, and contractor representatives attended the institute-sponsored meeting and heard Tyler Macdonald, vice president of Hixson & Jorgenson, Inc., advertising agency, and Joseph J. Alvin, head of the public relations firm, Joe Alvin & Co., describe the development of campaigns to create public demand for better body comfort.

(Goal of the stamp plan, it has been explained, is "to advance the methods and practices of the industry and to promote the interest and welfare of the consuming public.")

(The plan is a method of raising funds to be used for this purpose. Under the program, the manufacturer or supplier buys stamps from the institute. These stamps accompany the delivered equipment to the dealer, who is charged accordingly.) Both the advertising campaign, which started recently in leading southern California newspapers, and the public relations program will be supported by the stamp plan, which R. E. (Rudie) Harkens, managing director of the institute, reports as "about 80% subscribed."

New Los Angeles city regulations governing combustion air intake were explained at the meeting by A. B. Wicks, chief of the heating and refrigeration division, Dept. of Building and Safety.

Dollars invested now in the stamp program will mean millions for the industry in the future if full support is given the stamp program, institute members were told.

Macdonald warned the industry that public apathy toward adequate heating and air conditioning was found to be great by a preliminary Hixson & Jorgenson survey and that energetic measures must be taken to overcome it.

Alvin warned that the heating and air conditioning industry could well lose control over the human comfort installations, and that such control is increasingly important to the health and well-being of millions of southern Californians as indi-



will your dream house have a "skeleton in the closet"?

A cheap, cost-cutting heating system saves you about the price of a portable 14" T.V. set—Such a job usually costs about the same as half a kitchen range, or half a refrigerator.

Shocked? Don't be. Most so-called "forced-air heating" systems in houses costing up to \$20,000 (furnace, installation, ducts, thermostat, etc.) cost less than \$250 to the builder.

Give yourself a break—Less than 3¢ more a day would let the builder give you and your family a healthful, comfortable heating system. Tell your real estate agent, architect or contractor it's worth 3¢ more a day for adequate heating. Tell them you want no skeletons in your closet—you want good heating.

This message is printed as a public service by the
**SOUTHERN CALIFORNIA HEATING
& AIR-CONDITIONING INDUSTRY**

TEAR THIS OUT

and take along when you go house hunting

DON'T GAMBLE WITH YOUR FAMILY'S HEALTH

Builders who give full heating value will be glad to help you prove they offer you a better buy!

- ☐ 1. Is the heating system quiet? Ask for a 5 minute demonstration with the heat turned on!
- ☐ 2. Is there at least one heating outlet in every room?
- ☐ 3. Are the heating outlets adjustable? Try them yourself!
- ☐ 4. Is the heating system controlled by a thermostat?
- ☐ 5. Is the heating system installed and guaranteed by a licensed heating specialist? Ask to see his name and phone number on the furnace!
- ☐ 6. Does the home builder guarantee the system to heat adequately?
- ☐ 7. Is the heating system readily convertible to year-round air conditioning? Ask the builder what specific provisions have been made for this!

HOW TO RATE A HOUSE: Total your points (one for each feature). If the house scores 4 points it has satisfactory heating, 6 points good heating, 7 points outstanding.

LOW SCORE! 99 CENTS A MONTH MORE IS ALL IT COSTS TO BUY A PROPERLY HEATED HOME!

7-Point Check List Keeps Buyers On Alert for Quality Heating

LOS ANGELES—"Is there a skeleton in the closet of your dream home? There is if your heating system doesn't meet seven simple requirements," the Institute of Heating & Air Conditioning Industries is telling women buyers.

"Before you sign on the dotted line," the institute advises them, "check the following seven points or ask the man of the house to do it:

"1. Is the heating system quiet? Ask for a five-minute demonstration with the heat on.

"2. Is there at least one heating outlet in every room?

"3. Are the heating outlets adjustable? Try them yourself.

cated by a recent study here. The study showed, he said, that though people are drawn to California by climate, the working man and woman here actually spend 23 out of 24 hours or 96% of their week-day time, in an atmosphere completely or partially controlled by man.

Eighty-five thousand new families will be formed during 1957 in the southern California counties covered by the institute, he pointed out. If the value of each heating installation sold to these new families alone could be increased \$100 to \$150 each, the industry would stand to gain over \$8 to \$12 million in added income.

This, he said, would be exclusive of any other new construction, or of the remodeling market, which in Los Angeles alone is a \$200 million a year business.

Alvin was assisted in his

"4. Is the heating system controlled by a thermostat?

"5. Is the heating system installed and guaranteed by a licensed heating specialist? Ask to see his name and phone number on the furnace.

"6. Does the home builder guarantee the system to heat adequately?

"7. Is the heating system readily convertible to year-round air conditioning? Ask the builder what specific provisions have been made for this.

"Total your points. If the house scores 4 points, it has satisfactory heating. Six points means good heating and 7 points outstanding."

presentation by Don May, former art editor of *Holiday* magazine and design counselor.

President Hall told the members the 1957 outlook for both heating and air conditioning is bright "if the industry checks its downgrade course by stamp plan support."

Air conditioning installations in southern California should increase at a rate nearly 400% higher than the national rate, he said.

The national increase is estimated at 20%, while the boost locally is foreseen at 75%. Heating units installed in the Southland should maintain the same ratio of increase as in 1956 or 80 to 10 %, Hall declared.

The best sign in the residential air conditioning breakthrough is the increasing interest progressive tract builders are taking in comfort control systems as a spur to sales.

SKELETON dramatizes need for consumer to check what he is getting for his heating dollar when he buys new home. Bottom of ad tells reader that a properly heated home will only cost him 99 cents more per month. This type of advertising is aimed at helping dealers to compete with the competition which is putting plants in order to keep costs down and get the job.

Air Moving Code UA Suggests On Warm Air FundStandards Is Being Changed See Upped Cost

CINCINNATI—New requirements for air distribution in warm air heating furnaces have been published by the American Gas Association, it was reported here.

Effective Jan. 1, 1958, the new requirement mainly affects the air distribution system while other factors and components remain the same, according to William Morrissey, blower sales manager for Lau Blower Co.

"This new test calling for a 65° temperature rise at .5 external static pressure compares with the previous one calling for an 85° rise at .25 external static pressure," he pointed out. Since total resistance increases geometrically, this means that a blower must operate against four times as much total resistance.

"The prime reason for this new test is the continuing sales growth of combination furnaces and air conditioners and the 'add-on' air conditioners to existing furnaces."

Morrissey said his company's new "Preslock" wheel "not only meets these requirements but exceeds them by a full 50% in mechanical capability. This is a spun wheel with each blade locked mechanically into the center disc. Four disc fingers slip into the blade aperture and are pressed together in locking position.

"The range of sizes in this new wheel is being expanded. It is now available in A-12A and A-15A wheels both full and three-quarter widths. By March, 1957, we expect to have it available in A-9A and A-10A wheels, both full and three-quarters widths."

Morrissey said that many furnace manufacturers are now beginning to meet the new AGA requirements rather than waiting until 1958.

DEALERS can see and feel operations of this new Tuck-air "CAD" air conditioning furnace. Sections have been removed from the evaporator cabinet and the high side cabinet, covered with plexiglas, and a sight glass inserted in the liquid refrigerant line. Louvers on the 3-ton evaporator, direct cool air on interested observers. Left to right: H. C. Schmitt, cooling division manager for Tuck-air; Joseph Casaretto, owner of San Carlos Sheet Metal Co., San Carlos, Calif.; and Frank Perez, territory manager for Tuck-air.



WASHINGTON, D. C.—The United Association recently issued what it calls "a set of recommendations to guide union trustees in administering health and welfare funds."

The new standards are the result of a study launched in 1953 by a special UA committee which studied 106 health and welfare funds in the union's locals.

(If these recommendations are pressed and adopted in contracts, they probably will result in increased labor costs for heating, plumbing, and air conditioning contractors.)

The committee's report presents recommendations pertaining to benefit standards, administration, eligibility standards, and contributions. It includes discussion and explanation of current practices under the various funds and the observations of committee consultants, and also suggested goals for local unions to aim for in negotiations with contractor groups.

Peter T. Schoeman, UA president, has advised union organizers and local officials that the committee's recommendations were adopted as policy by convention action. Establishment of a single national health and welfare fund has never been considered by the UA and it does not intend to do so in the foreseeable future, according to Schoemann.

Renamed Tuck-Aire Co. Includes Add-On Units In Furnace Mfg. Line

SAN FRANCISCO—A veteran company in furnace manufacturing, now in the air conditioning field with add-on units, changed its name recently.

To honor the firm's late founder, George A. Tuck, the name is Tuck-air Furnace Co. instead of International Sales Co.

George A. Tuck was an engineer graduated by the University of Minnesota who came to San Francisco in 1903 and five years later in 1908 with a partner started a small sheet metal shop, the Atlas Heating & Ventilating Co. The new company began converting wood and coal units to gas, plentiful with the development of California's natural gas fields.

Tuck had engineering talent. He improved and developed warm air heating.

The complete air conditioning offered today by Western and (Concl. on next page)

Tuck-Aire--

(Concluded from preceding page)
Atlas furnaces by the addition of refrigeration units, also makes use of "the basic advances first developed by Tuck and his companies."

Among these advances, according to the company, were introduction in 1921 of the first forced air furnace with adjustable needle and hand control valves, and three-way electric control switch, and such others as:

In 1922, fan and limit switches now universally standard on all AGA approved gas furnaces; in 1925, 16-gauge steel combustion chamber; in 1932, modern sectional furnace; in 1949, cross-fire safety pilot system, and "Thin Boy" zero-clearance furnace.

As a sales agent for Atlas furnaces, International Sales Co. was formed in 1923. Later it took over all furnace manufacturing for Tuck companies and now ranks among the first 10 furnace companies for manufacture and sales, according to James F. Deane, vice president and general manager.

The present San Francisco plant was built in 1941. Its distribution territories cover every section of the United States, and some parts of Canada.

President of Tuck-Aire is James P. Tuck, son of George A. Tuck. William F. Steiner is general sales manager. Harold Marble is chief engineer.

H. C. Schmitt came to the company in 1955 as manager of the cooling division. He was formerly residential cooling refrigeration engineer for Norman Products Co., Columbus, Ohio.

He has prepared a service manual on operation, installation, and maintenance of Tuck-Aire's remote air-cooled air conditioning units.

Schmitt made a demonstrator model of the new CAD air conditioning furnace model using a 3-ton evaporator, and mounted it on a trailer for convenience in showing the unit to dealers and distributors.

Tuck-Aire features a newly-developed "Correct Air Delivery" line, CAD for short, giving the right amount of air with the use of a 2-speed blower, low speed for heating, high speed for cooling.

Warm Air Group Plans Short College Courses On Heating, Cooling

CLEVELAND—Nine college short courses on warm air heating and air conditioning will be offered this spring by the National Warm Air Heating & Air Conditioning Association.

The intensive four-day courses, open to all members of the heating and air conditioning industry, are held in colleges throughout the east, south, and midwest.

Registration fees vary from \$25 to \$45, depending on the school attended. The fee covers cost of all materials used, but does not include lodging or meals.

A course is currently under way at Washington university, St. Louis and one has been completed at Penn State university.

Those still to come are:

Feb. 18-21—Oklahoma A & M, Stillwater, Okla.

March 4-7—Ohio State university, Columbus, Ohio.

March 11-14—North Carolina State college, Raleigh, N. C.

March 25-28—Michigan State university, E. Lansing, Mich.

April 1-4—Long Island Technical and Agricultural Institute, Farmingdale, L. I., N. Y.

April 8-11—University of Omaha, Omaha, Neb.

April 15-18—Purdue university, Lafayette, Ind.

April 15-18—Syracuse university, Syracuse, N. Y.

April 29-May 2—University of Connecticut, Storrs, Conn.

Firm Changes Name

JOPLIN, Mo.—Joe Milligan and Ferne Milligan, operators of The Milligan Sheet Metal & Heating Co. in Joplin for the past 20 years, announced a change in name to Milligan Air Conditioning & Heating Co., 822 Joplin St.

New Regulations Planned for Public Safety In Los Angeles

LOS ANGELES—New warm air furnace regulations which will "insure homeowners more efficient and safer heating" were made public at a meeting of the Institute of Heating & Air Conditioning Industries.

A. B. Wicks, chief of the Heating and Refrigeration Div. under Building and Safety Superintendent Gilbert Morris, said furnaces installed in the city after Jan. 21 must have air for combustion piped in from the outside or be so situated that adequate combustion air is available from the attic.

Wicks said that the regulations, drafted in close voluntary cooperation with the local heating and air conditioning industry in its program of self-improvement.



DEMONSTRATION MODEL of Carrier Crestline upflow gas-fired furnace was a feature of three-day product and promotion presentation held by Carleton-Stuart Corp., New York Metropolitan area distributor for Carrier. Dealers, builders, and utilities personnel attended the presentation. Pete Wehrlein (l.), residential sales promotion manager for Carleton-Stuart, shows the disassembled furnace to engineers from Consolidated Edison.

NEW 1957 ^{MODEL ZL} Electro-Klean

ELECTRONIC HOME AIR FILTER

The company that pioneered electronic air filters now breaks the cost barrier for home filters!

Only the oldest and largest manufacturer of electronic air filters could produce such a tremendous value! Electro-Klean is backed by a progressive organization with more than 30 years' experience in air filtration... more than 12 years' research in home air filter development... more than 5 years of actual sales experience in home air filters. All this, plus a completely new design and volume production make possible an electronic home air filter you can sell at amazingly low cost... at full profit!



American Air Filter
COMPANY, INC.

109 CENTRAL AVENUE • LOUISVILLE 8, KY.

Better Air is Our Business!

Winter Air Conditioning Fundamentals

1. Review of Types of Equipment That Are Being Sold and Installed Currently

By H. C. Gurney, Janitrol Div., Surface Combustion Corp.

Except for television, no other large industry has developed so rapidly as winter air conditioning. In our generation, we have seen one cycle of transition from the pot bellied stove to fully automatic winter air conditioning systems. We are now at the start of the second cycle—the development and acceptance of complete, year-round air conditioning, which in many ways seems to parallel the growth of winter air conditioning.

The design and installation of good, reliable, automatic heating has become quite an exact science in comparison to the haphazard methods used a quarter of a century ago. This progress has been due to the combined efforts of the national associations of the fuel suppliers and the manufacturers of heating equipment who have, over the years, subsidized the research which established our present day principles of installation.

The pioneer in this field was The National Warm Air Heating & Air Conditioning Association who established the first standards and codes for warm air distribution systems. Also, the heating manufacturers have designed and made available a great variety of equipment so that the heating contractor has unusual flexibility in designing an installation to fit the comfort requirements and also the pocketbook of every prospect. Unfortunately, many systems are still not always installed as well as we know how . . . but the industry is capable!

Some of the more common types of heating equipment will be reviewed in this issue. Most of these items are available in a variety of fuel types, which are selected by either good availability or customer preference—oil, utility gas, or L-P gas.

The Conversion Burner

The conversion burner is the pioneer of automatic heating, as

we know it today. In some areas, conversion burners have been in use for over 20 years. Today, however, we find that they are usually most popular in areas of new gas availability.

The conversion burner is designed for installation in the fire box of a boiler or furnace that is in good condition. If no new ductwork or piping is required, the installation can usually be made in one day or less.

The modern conversion burner is a completely assembled unit. Manufacturers supply detailed information data which will speed up the installation and adjustment of burners. Properly installed and adjusted, performance is often comparable in efficiency and comfort with gas-designed equipment.

Winter Air Conditioners

The winter air conditioner is the most popular type of heating in use today. These conditioners are extremely compact, containing the blower filters, heat exchangers and automatic controls all pre-assembled in attractive cabinets. Three basic types are in common use, each identified by the direction of discharge of the heated air. These are known as the vertical or upflow; counterflow or downflow; and the horizontal.

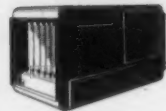
The vertical type is most frequently used, because it can be installed so many places—in the basement, utility room, kitchen, or even a closet. The "high boy" version with the blower and filter sections located beneath the heat exchangers requires very little floor space.

The "low boy" version, with the blower compartment behind the heat exchanger section, has a lower cabinet, but requires more floor space. This model is used frequently in the basements of older homes with unusually low ceilings.

The downflow models have been increasing in popularity every year. This is due to their extensive use in ranch type



Conversion burner.



Horizontal conditioner, designed for overhead support.



Vertical type "high boy" winter air conditioner.



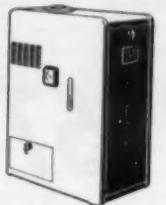
Gravity furnace, designed for automatic firing.



"Low boy" model, blower compartment behind heat exchanger.



The floor furnace.



Steam or hot water boiler.



Downflow model winter air conditioner.



Unit heater.

homes where the perimeter type of air distribution system installed in the floor or slab is popular. These models are extremely compact, about the same cabinet size as the vertical models, and usually approved for installation with close wall clearances.

The horizontal conditioner is a true space saver since it requires absolutely no floor space. The blower is placed behind the heat exchanger, and the unit is designed for overhead support. It can be placed in a crawl space, hung from joists or rafters, used sitting on the attic floor, or hung from the ceiling in a garage or utility room.

Installation possibilities with this unit are just about limited only by the installer's imagination. In many commercial or industrial buildings, this unit is

The author of this series of articles, Harry C. Gurney, has spent his entire business career in the heating industry, and has had a part in the evolution of all the improvements that are accepted as standard today.

Starting as a factory representative, he has trained field personnel in merchandising, installation, and service of heating systems. He progressed through district and field offices to his present position of sales manager of the Janitrol Heating & Air Conditioning Div. of Surface Combustion Corp. Gurney has also gained recognition for his work in all the associations in the heating field.

The author has stated that he will answer such questions (where an answer is possible) as may be directed to him by readers, in some later instalments in this series.

The editors believe that readers will find the same kind of useful information in this series as they did in the "Short, Short Course In Air Conditioning Fundamentals" which proved so popular last year.



H. C. GURNEY

used in place of the conventional unit heater since it is unusually quiet in operation.

The Gravity Furnace

The gravity furnace is an old reliable type of heating that now has automatic firing. Its operation is based on the fact that heated air rises, and uses this feature as a means of distributing warm air and returning cold air without use of a blower.

The modern gravity furnace can provide excellent fully automatic heat in compact, basement type homes. It is lower in initial cost, heats up rapidly and is noted for its extreme quietness.

The Floor Furnace

Here's a "miniature," automatic gravity-type furnace that is frequently used in heating small, one floor basementless homes located in milder climates. Several of these units may be installed in the same structure.

The unit is recessed beneath the floor, extending down into the crawl space below the house. It requires no duct system and hence, may be installed very economically.

The Steam or Hot Water Boiler

The modern boiler is extremely compact in comparison with its predecessors and has been redesigned to give top automatic heating efficiency. Models are available for steam and forced or gravity hot water circulation.

They are used with radiators, either baseboard or free standing convectors and radiant panel systems of heating. These types of "wet" heat are noted for their quietness and trouble-free operation.

The Unit Heater

These space-saving, cost-saving heaters answer a multitude of commercial and industrial heating problems. Each heater is an automatic, self-contained unit that is rapidly installed with low initial investment and very economical upkeep. A great variety of propeller type, blower type, duct, and floor mounted units are available in sizes ranging from 25,000 to 2,000,000 B.t.u. per hour inputs.

In subsequent instalments, the installation, service, and operation of the various types of heating equipment will be covered. If any reader has any specific questions or problems

on heating, please submit them to the editor and we will endeavor to include them in our future discussions.

(To Be Continued)

I've Got It! —How About You?



dacor

DISPOSABLE ACTIVATED CARBON ODOR REMOVER

we mean!

It keeps her home free of stuffiness, dust and pollen . . . banishes problem odors like magic . . . cuts heating and cooling bills, also (her hubby's happy about that, too!) DACOR has a way of building boosters and boosting sales. Why not add DACOR fast action filters to the air conditioning and forced-air furnace systems you make or sell?

DACOR will:

- ★ eliminate smoke, smog and smell
- ★ banish odors and dust
- ★ make units more efficient
- ★ build sales for you

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CO., Columbus 19, Ohio

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I'm interested in Dacor; tell me more!	
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Address	
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City	State



Specify FURNAS ELECTRIC CONTROLS

THE BEST FOR AIR CONDITIONING AND REFRIGERATION

These starters and contactors provide across-the-line control of hermetic and general purpose motors used in the air conditioning and refrigeration industry. They have been specifically designed to satisfy the particular performance requirements of the loads and duty cycles, plus the space and economic requirements set forth by the air conditioning and refrigeration industry.

Visit our Booth No. 231 at the 13th International Heating and Air Conditioning Exposition.

A24

FURNAS ELECTRIC COMPANY
BATAVIA, ILLINOIS

SALES REPRESENTATIVES IN ALL PRINCIPAL CITIES

For more information about products advertised on this page use Information Center, page 42.

Heating Men To Attend Problems In Air Conditioning Schools Studied by ASHAE Local

UTICA, N. Y.—An air conditioning course for heating contractors and servicemen is being conducted here under the sponsorship of Empire Plumbing Supply Co. of Utica, Airtemp Div. of Chrysler Corp., and Mohawk Valley Technical Institute.

Classes are being held at the institute. The first one was held Thursday evening, Jan. 24.

The "concentrated" course consists of eight weekly sessions covering these subjects: Heat as applied to air conditioning; calculations of cooling loads; humidification and dehumidification; job design and application; air conditioning controls; servicing air conditioning systems; financing air conditioning systems; and selling summer air conditioning, the institute reported.

Instructor-coordinator is Carl Rosoff, sales manager of Empire Plumbing Supply. He is being assisted by three Airtemp representatives — William Pollar, district manager; Fred Roske, field engineer; and Charles Hildenbrand, sales training director.

In addition, Sporlan Valve Co. will present a lecture on various air conditioning valves and Minneapolis-Honeywell will conduct one class on air conditioning controls.

Tuition for the course is \$20, including a banquet. Certificates will be awarded upon successful completion of the course, it was explained.

Hot-Water Coil Heating Replaces Gas Furnace Box In College Jet Lab

PASADENA, Calif. — Key area of the Jet Propulsion Laboratory, California Institute of Technology, was recently being converted from gas furnace box heating to a hot-water coil method, a spokesman for the facility indicates.

Involved are engineering and research offices, located in the Wind Tunnel building, itself a test facility for scale-model guided missiles.

Necessity to replace obsolete equipment and the need for complete temperature control due to the extensive amount of paperwork handled in that section were the reasons given for the new installation.

Equipment set includes Drayer-Hanson air handling units, consisting of two floor-mounted blower-coil units, installed in the machinery room. Equipment, designated HHV-112's, is matched with 10-ton Worthington compressor and American-Standard boiler. Thermostatic control is featured, it was announced.

The statement indicated further Drayer-Hanson air conditioning equipment was to be installed in a research laboratory of the Jet Propulsion Laboratory, giving complete year-round air conditioning and temperature control.

Drayer-Hanson equipment was sold through company's area representative, Air Conditioning Supply Co. located in Los Angeles.

AUSTIN, Texas—Problems of air conditioning the school buildings of the Austin public school system are being considered by a special committee of the Austin chapter of the American Society of Heating & Air Conditioning Engineers.

School officials have asked the committee to report on the first cost and operating cost and to give its recommendations for methods of handling old schools.

The committee was also asked to recommend architectural changes in new school plans that will be conducive to economical construction and minimum operating costs for air conditioning.

At an organizational meeting last November, Chapter President B. Segall, Jr. pointed out to

the 15-man committee that with 30 pupils in the classroom and the lights turned on, the occupancy load would be equal to the transmission losses to 30° F. outside temperatures. Hence the important factor in conditioning the school was cooling rather than heating, he said.

Heating systems should have sufficient capacity to bring the classrooms up to design conditions in a few hours before school begins. Then, outside air, tempered or cooled together with recirculated air, would satisfy the conditions to established.

The committee was made responsible for the establishment of both outside and inside design temperatures.

It is also making a study of

minimum and maximum temperatures experienced during hours of school occupancy covering the period from Sept. 1 to June 30.

The present school year running from September to May might be changed to October through June should investigation develop more ideal conditions, according to Frank Frazee, a member of the committee.

'All-Industry Program' To Promote Heating

WASHINGTON, D. C.—Kohler Co. of Wisconsin recently became the first major manufacturer of plumbing fixtures to contribute to the "1957 All-Industry Program" to promote plumbing, heating, and cooling.

"The All-Industry Program represents the type of cooperation that has been needed for

many years," said A. G. Zibell, plumbing and heating sales manager for Kohler, in announcing his company's support. "In our judgement, the all-industry effort should produce important results and benefits."

The sizeable contribution from Kohler Co. was accepted by Wilbur S. Hokom, chairman of the All-Industry Plumbing and Heating Modernization group.

"With all segments of the industry working as a team, we expect the 1957 program to be the most productive and profitable to date. The year-round program will receive its greatest emphasis during May, selected by the industry as Plumbing-Heating-Cooling Month," he said.

Cool Hospital Wing

NASHVILLE, Tenn. — Air conditioned, a new ultra-modern wing, with 60 beds and new kitchen, has been opened at General hospital.



Quiet, Trouble-Free Efficiency Is Yours With Electro-Wheel



Are you interested in a blower unit that practically eliminates the need for service . . . delivers more air against higher statics . . . operates more quietly . . . and is more compact? *Electro-Wheel gives you all this, and more!*

The torque from the split capacitor motor is delivered directly to the rotor wheel. Electro-Wheel thus eliminates bearing and shaft journals, belt and pulleys . . . and resulting efficiency losses. *Take out all these moving parts and the need for service is virtually eliminated! Much quieter, too!*

The bearing bracket is inverted to pick up the shaft inside the housing. Electro-Wheel is unmatched for compactness because no part extends beyond the scroll side.

Electro-Wheel is versatile. Scroll sides are pre-punched so that housing supports may be applied to obtain four angles of discharge. Provision is made for attaching BX for electrical connectors and for variable-speed, electrical control.

Your Lau representative will be pleased to explain your advantages with Electro-Wheel. Range of sizes available.

See Us February 25 to March 1 at Booth 836, International Air Conditioning Exposition, Chicago, sponsored by ASH&AE.

THE LAU BLOWER COMPANY

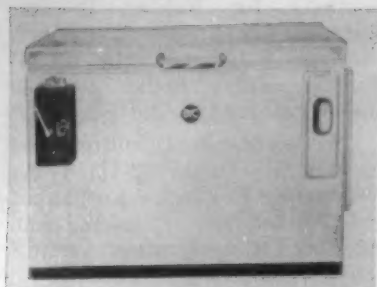
2007 Home Avenue, Dayton 7, Ohio

Azusa, California. In Canada: The Lau Blower Company of Canada, Ltd., Kitchener, Ontario

World's Largest Manufacturer of Air-Conditioning Blowers

What's New

Vendor Holds 136 Bottles In Rack, 136 In Storage



—KEY NO. G-210—

NEW MILFORD, Pa.—A new beverage vendor that is said to dispense eight flavors and has a stainless steel rack and trap was recently introduced here by Brew-Titchener Corp.

Known as the BTC "Bev-Vendor," the new unit holds up to 136 bottles in the rack, while pre-cooling an equal number in the storage compartment, the firm said. Rack and storage compartment both reload from the side. The standard unit has a mechanical dime coin mechanism.

The vendor features a completely packaged pull-out refrigeration unit, has a counterbalanced top, forced air cooling, and is warranted for a year. The 1/4-hp. condensing unit is warranted for five years.

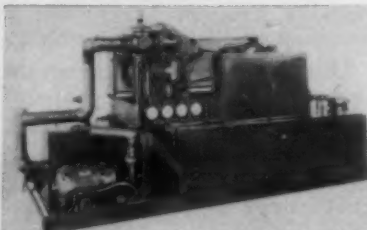
Measuring 49 1/2 by 27 1/2 by 37 in., the vendor utilizes vermin-proof insulation. It is equipped for faster assembly.

'Chil-er' Eliminates Excessive Process Heat

—KEY NO. G-211—

LINCOLN PARK, N. J.—Designed and engineered for the plating and anodizing industry, a refrigeration and recirculation unit was recently introduced here by Mayer Refrigerating Engineers, Inc.

Mayer "Chil-er" models eliminate excessive process heat by either circulating cold water through lead pipes immersed in the acid bath or supplying cold water



to special heat exchangers through which the acid is circulated, the firm said.

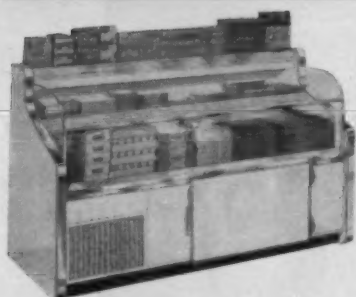
FROM FOOD
TO FLOWERS...

for dependable refrigeration, sell

Schmidt

- COOLERS • FREEZERS • SERVICE and SELF-SERVICE CASES
- WALK-INS • REACH-INS • SLIDING DOOR

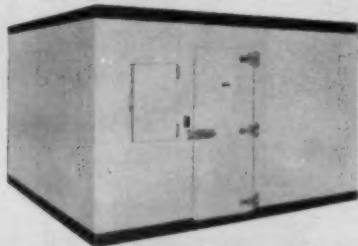
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The C. SCHMIDT Co.

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Kauffman Has Underdash Auto Air Conditioner

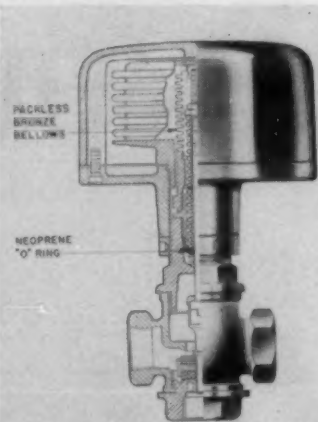
—KEY NO. G-212—

ST. LOUIS—Kauffman Air Conditioning Co. here recently offered its 1957 auto air conditioner model for underdash installation.

Also adaptable for trunk, truck cab, or station wagon use, the unit can be removed from car to car, is compact, and carries a 90-day or 4,000-mile warranty, the company stated.

Four air circulators discharge air through the entire car and the unit works effectively while idling, it was explained. Controlled by a three-speed switch, 300 c.f.m. of cooled air is changed twice every minute.

The unit is made for operation on 6 or 12 volts.



Packless Pneumatic Valve Introduced

—KEY NO. G-213—

SKOKIE, Ill.—Powers Regulator Co. here is offering duo-seal packless pneumatic valves for convectors, unit ventilators, air conditioners, and radiators.

Instead of packing, the valves use a bronze bellows as a primary seal and a spring-loaded neoprene "O" ring as a secondary seal. The bronze bellows eliminates leakage and requires no maintenance.

The neoprene ring at the base of the packless bellows will "effectively" prevent steam or water leakage or vacuum loss. This permits normal operation until the damaged bellows is replaced.

Worthington Offers New Warm Air Furnace Line

—KEY NO. G-214—

HARRISON, N. J.—Worthington Corp. now offers a complete new line of warm-air furnaces available in about 50 different types and sizes, the company announced.

Ranging from 80,000 to 250,000 B.t.u.h. for residential or commercial applications, the oil or gas-fired units are designed for addition of summer air conditioning equipment, it was explained. They are available in low-boy, high-boy, horizontal, or counterflow models.

Oil-fired low-boys are available in 100,000, 125,000, 150,000, 165,000, and 235,000 B.t.u. input.

Gas-fired high-boys can use natural, mixed, manufactured, or propane gases, provide 100,000 B.t.u.h. input and 80,000 output at bonnet, it was added.

Horizontal model is either gas or oil fired, and can be suspended as a blower unit heater. It comes in four sizes: 110,000, 150,000, 200,000, and 250,000 B.t.u. input.

Counterflow is gas fired, and can



be used for perimeter heating, the firm said. It is available in 80,000, 100,000, 110,000, and 140,000 B.t.u. input sizes. All models have a large centrifugal multi-blade wheel blower.

'Roll-O-Vent' Filter Contains Fan, Coil Section

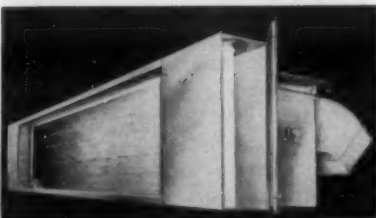
—KEY NO. G-215—

LOUISVILLE, Ky.—American Air Filter Co., Inc. recently introduced its "Roll-O-Vent" automatic filter which contains a fan section and coil section.

Standard and non-freeze steam coils, as well as hot and chilled water and direct expansion coils are available in a wide variety of sizes and capacities along with various accessories to adapt the unit to almost any given field conditions, the firm said.

"Roll-O-Mat" media is composed of continuous, slightly curled, interlaced glass filaments averaging .001-in. in diameter held in place with thermo-setting plastic bond to form a "blanket," the company explained.

Fabricated into 65-ft. lengths, the glass blankets are impregnated with a non-flammable viscosins that "will not drip up to temperatures of 150° F.," it was pointed out. They are cut into strips of different widths to fit coordinated line units and tightly rolled on



spools having an outside diameter of 13 in.

Roll-O-Mat is disposed of by removing the spool of dirty media and replacing with a spool of clean.

Electrical Humidity Detector Developed

—KEY NO. G-216—

PHILADELPHIA—Development of a new electrical humidity detecting system has been announced here by El-Tronics, Inc.

Now in production, the new system is adaptable in areas other than packaging where humidity presents a problem, the firm stated.

Information Center

For more information on What's New products, current literature and catalogs available, equipment advertised in AIR CONDITIONING & REFRIGERATION NEWS use Key Numbers where designated or specify products advertised and we'll see that you receive this information promptly.

Products Advertised
(list name, page, and issue date)

What's New or Current Literature Available

Key No.	Key No.
Key No.	Key No.
Key No.	Key No.
Key No.	Key No.
Key No.	Key No.

Name Title
(Please Print)

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City Zone State

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The NEWEST design in water-cooled refrigerant condensers. Used by major equipment manufacturers because of these—

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Amana Redesigns 'Deepfreeze' Units, Offers '57 Line



—KEY NO. G-217—

AMANA, Iowa—Amana Refrigeration, Inc.'s first "Deepfreeze" models were introduced here recently. By redesigning the cabinet interior, about 5% more food storage space was added to the Deepfreeze units, Amana claims.

Models DF90 (9.3-cu. ft. capacity), DF160 (15.7 cu. ft.), and

DF220 (22.1 cu. ft.) have compressor life and efficiency increased by introduction of an internal oil cooling system, the firm added.

"Use of a radiant condenser, with the freezer's shell serving as the heat-removing medium, insures full efficiency, eliminates fan noise, cabinet sweating, and regular cleaning of the condenser system," engineers said.

Food baskets, dividers, and a safety light are other features.

Amana's re-styled upright freezers, model 12, 15, 19, and 25 W, freezer-plus-refrigerators, FPR-14 and FPR-18, and built-ins, BIR and BIF, contain many design changes and alterations, it was explained. All units have new interior color styling.

New 1957 freezer-plus-refrigerators have nearly all convenience features redesigned, "with metal parts and trim adding strength and attractiveness," the firm pointed out. There are new glide-out shelves in the refrigerator section and more bottle shelf capacity in the refrigerator door.

Built-in refrigerators and freezers with satin finish chrome doors are available in addition to the white, copper, and yellow door models, the company stated.

A radiant condenser has been added to the freezer-plus-refrigerator, "eliminating need for the condenser fan," it was noted.

MARCH CONDENSATE PUMPS

- EASIEST INSTALLATION — COMPACT TO FIT ANY UNIT
- END YOUR PUMP PROBLEMS — EXCLUSIVE AIR BLEED DESIGN

Condensate drain systems at a fraction of the cost of gravity lines. Compact "in-pan" mounting. Fundamentally NEW and EXCLUSIVE pump design (patents applied for). Cycles with compressor, fan or defrost control. Runs dry. Positive priming. Thermal protected. Complete line for every need.

MODEL A—handles vertical lifts up to 6 feet, horizontal to 200 feet.



MODEL B—for vertical lifts to 9 feet, horizontal runs to 300 feet.



MODEL C—(left) vertical lifts up to 21 feet, horizontal to 300 feet.

Complete line for system cycling or float valve control. Write for bulletins and data.

MARCH MANUFACTURING CO., INC.
8019 NORTH LAWNDALE
SKOKIE, ILLINOIS

the Power-Packed "UNIMOUNT" line

Oil-Fired Boiler Used For Hot Water Heating

—KEY NO. G-218—

NEW YORK CITY—A new oil-fired boiler, available either as a factory packaged unit or as a boiler burner unit for hot water heating was recently announced here by the Plumbing & Heating Div., American-Standard.

"Arcoleader" unit is designed for quick, low-cost installation, minimum maintenance, dependability and efficiency, the company said. It is suitable for most residential jobs.

Two sizes in three and four sec-

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MEAT DISPLAY CASES

- BEAUTIFUL
- ECONOMICAL
- DURABLE
- PROFITABLE

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MONTGOMERY, ALABAMA

tions are available factory-assembled, packaged, and crated. Controls and accessories are factory-installed and prewired, it was added.

All sizes are available in boiler-burner units, including three, four, and five sections. One feature of the unit is its approved high domestic hot water heater ratings, according to the manufacturer. Both boiler and tankless heaters are designed to supply hot water.

Flow of flue products in the cast iron vertical flue sections is completely updraft for adaptability to gas, it was noted. Off-center location of the 6-in. nipple port, combined with wet base construction, provides boiler water circulation. All accessories and controls are set in front.

Arcoflame PH burner is installed with sling mount to provide firing with clean flame. An adjustable inlet air band permits precise adjustment, it was stated.

The new boiler has output range from 100,000 to 173,000 B.t.u.h. covering three, four, and five section sizes. Three sizes of tankless water heaters are available.

'Gasaver' Kit Tests, Adjusts Gas Burners

—KEY NO. G-219—

PITTSBURGH—New "Gasaver" kit recently developed by Bacharach Industrial Instrument Co. here provides a full set of instruments for testing and adjusting any make and type of gas burner in accordance with AGA standards and municipal ordinances, it was announced.

Included in the kit are basic combustion-testing instruments (carbon dioxide indicator and stack thermometer), draft gauge, neutral pressure point indicator, gas pressure gauge, oxygen indicator, and carbon monoxide detector.

Neutral pressure point indicator is used when adjusting the draft head on gas conversion burners, and the gas pressure gauge, a U-type manometer, when checking and adjusting manifold pressure, the company stated.

The oxygen indicator is needed on installations which must meet code requirements specifying a flue gas test for oxygen as well



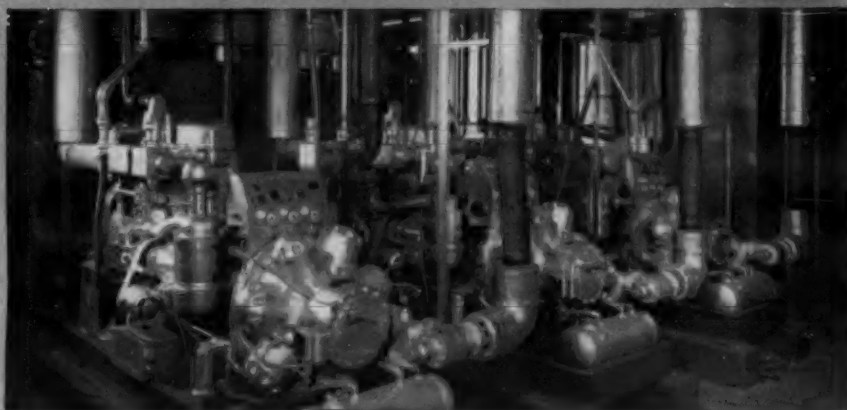
as for CO₂. Carbon monoxide detector is required to ascertain that the burner is set for complete combustion, it was added.

Two slide rule calculators are included in the kit. One is for correlating CO₂ readings and stack temperatures to show the percentages of actual combustion efficiency and stack loss. The other is used to determine orifice size or pressure for required heat input per orifice, or the reverse.

give your customers Ready-Power

NATURAL GAS air conditioning

economical
automatic
dependable



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For Restaurants



For Churches



For Theaters

Call for Ready-Power Natural Gas Air Conditioning Units and give your customers the advantages of air conditioning at its best. Designed and engineered to operate efficiently on economical natural gas, Ready-Power Air Conditioning Units give controlled summer temperature and humidity at lowest operating costs known.

Ready-Power Units feature a unique system of capacity modulation which permits continuous operation of the compressor at variable speeds. Cooling rate and power requirements automatically adjust to changing load conditions. Temperature and humidity variations common to "on and off" systems are eliminated. Ideal for theaters, restaurants, motels, hospitals, churches and store and office buildings where latent and heavy sensible loads must be met.

Ready-Power Air Conditioning Units are available up to 76-ton capacity, and

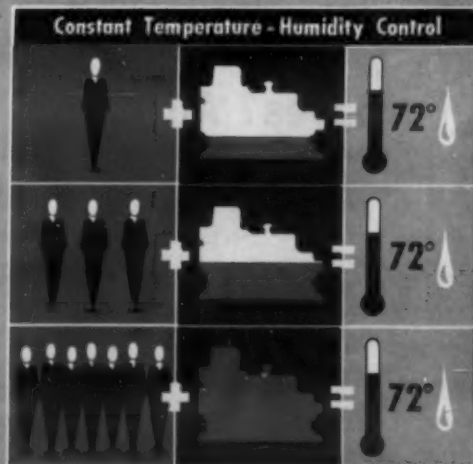
Visit The Ready-Power Booth, No. 1145, at The Heating and Air Conditioning Exposition

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SAVES AS IT SERVES

THE READY-POWER CO.
11231 FREUD AVE. • DETROIT 14, MICH.

many multiple unit installations of more than 150-ton capacity have been operating for years. Units are designed to operate with chiller or direct expansion equipment. Pre-engineered Chiller Packages, available through Ready-Power, simplify and speed installation of complete air conditioning systems.

Complete information is available. Write for it.



Manufacturers of Gas and Diesel Engine Driven Generators and Air Conditioning Units; Gas and Diesel Electric Power Units for Industrial Trucks.



—KEY NO. G-2110—

INSTALLATION WITHOUT CLEARANCE is possible with the "Modern Builder" model air conditioner and furnace made by Stewart-Warner Corp., says Carl G. Lang, western regional sales manager. Grilles can be placed on sides, rear, or front and there is a "knockout" on top to run ducts, he said.

What Was New

At the Builders Show

Pictures on this and the following page are of products shown at the Builders Show. For further information on these products, use Key Number and the "Information Center" blank on page 42.



—KEY NO. G-2111—

POINTING TO THE "Ezy-Connect" valves on the 3-ton evaporator coil atop a 120,000 B.t.u. "Weather-matic" furnace is Ben Breslow (l.), president of Utility Appliance Corp. He tells Bernard Rose, Los Angeles heating contractor, that the condensing unit and all tubing is also equipped with these valves, ready for installation.



—KEY NO. G-2114—

COME ON AN' SEE A. O. Smith Corp.'s new "Permaglas" self-contained, air-cooled air conditioner, invites Vivian Devine. It is available in 1 1/4, 2, and 3 1/2-hp. sizes.



—KEY NO. G-2115—

"WEATHER MINDER" thermister unit in the hand of T. C. McKee, Chicago regional manager of Detroit Controls Corp., passes a varying amount of current to automatically reset the indoor thermostat one setting for every 15° F. outside temperature change, he explains.



—KEY NO. G-2116—

DIFFUSER TYPE DISCHARGE GRILLE on Warren Webster & Co. 1/2-ton unit for a hot and chilled water system is pointed up by I. G. Brennan, sales manager of the firm's air conditioners and unit heaters.

MANUFACTURERS!

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NEW

PEERLESS OF AMERICA

"UNIVERSAL K"

HEAT-X-CHANGE SURFACE

At BOOTH 751—Heating & Air Conditioning Exposition, International Amphitheatre, Chicago—February 25th to March 1st.

The most talked about coil in the industry

PEERLESS OF AMERICA, INC.

5800 N. Pulaski Road • Chicago 30, Illinois, U.S.A.

—KEY NO. G-2112—

ILLUSTRATING COMPACTNESS of "Remotaire" water heating and cooling system exhibited by the Plumbing & Heating Div. of American Standard are W. R. Leigh (l.) and Leo Pfaff, Am-Stan builder sales representatives in Cincinnati and Pittsburgh, respectively.



—KEY NO. G-2113—

NEW "SPACE-SAVER" 3-ton air conditioner with V-type coil on an 80,000 B.t.u. output gas or oil-fired furnace, introduced by Airtemp Div., Chrysler Corp., is a companion model to Eve Reczek.

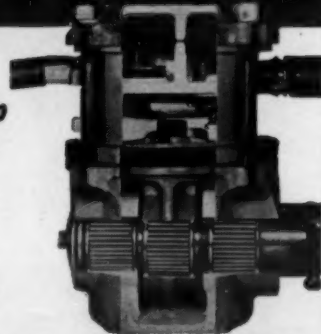


ACE, the quality line for air conditioning and refrigeration

MODEL 77

Diaphragm Descaling Acid Pump

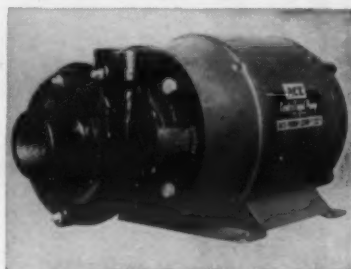
Descaling compounds can't affect this pump! All parts in contact with compounds are completely acid-resistant. Can be supplied as portable unit with pump and motor mounted on sturdy base and with convenient carrying handles.



Plus a complete line of centrifugal pumps

... sized to fit your needs. 1/4 H.P. thru 7 1/2 H.P. Easy to install and compactly built. Advanced features include exclusive baked-on lifetime finish to enhance appearance and resist corrosion, John Crane mechanical seal, and all-bronze one-piece impellers. Continuous duty motor.

Manufacturers representatives and distributors' inquiries invited.



PUMP CORPORATION

140 HERNANDO ST. • MEMPHIS, TENN.

Want to see America's Best Engineered Furnaces? Air Conditioners?

Visit Booths N 226 - 228 at the Heating and Air Conditioning Exposition. Fraser & Johnston Co., leading furnace manufacturers for over a quarter of a century, offers more than 50 models...all unsurpassed for fine engineering detail, performance and appearance.

FRASER & JOHNSTON CO.

SAN FRANCISCO, CALIF.

Feb. 25 - March 1
Heating and Air Conditioning
Exposition
Chicago
Booths N 226 - 228



—KEY NO. G-2117—

OUT OF COMPLETE line of General Controls Co.'s heating and cooling controls displayed here, B. L. Lerch, midwest regional manager, points up the new horizontal heating and cooling control for medium price homes. In this smaller design model, switches are actuated by one bi-metal rather than two.



—KEY NO. G-2118—

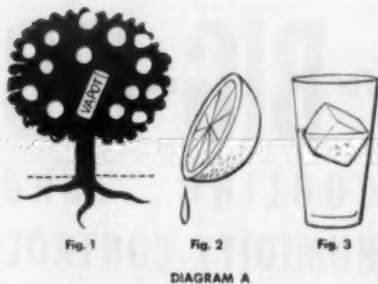
BRAND NEW "Hideaway" attic air conditioner in 2 and 3-hp. sizes available with fiber glass ductwork and wood finish grille for the attic and introduced by the Air Conditioning Div. of American Standard is discussed by H. W. Klein (l.) and D. C. McClymont, sales representatives.



—KEY NO. G-2122—

NEW "MATCH-MASTER" packaged air conditioning units in 16 combinations ranging from 18,000 to 70,000 B.t.u. in steps of 3,000 B.t.u. are shown by B. W. Henn, Cleveland district sales manager for Westinghouse Electric Corp. (l.), to John Aimonette of Wesco in St. Louis.

No. 2 in a series on refrigeration.



THE ORANGE is round, like the earth, but juicier.

There are two basic varieties, the Navel and the Valencia. The Navel orange has a navel on it. Presumably the Valencia has a valencia on it, somewhere.

Oranges grow on trees. (See Fig. 1, Dia. A, above.) The tree operates in an efficient manner and is a splendid example of hydraulic engineering. The principle of its operation is simple. The tree draws moisture from the earth, processes it and pumps it into globes where it is reduced to orange juice. Note Fig. 2, above, which represents a halved orange losing a drop of juice.

That's all there is to an orange tree. Mankind takes it from there and may even add 2 oz. of vodka to a glass of juice—Fig. 3.

But aha! How is the orange tree able to produce juice? It is able to do so because of a small working part the name of which escapes us at the moment but no doubt Roy C. Ingersoll, Chairman of the Board of the York Corp., could name the small working part of the orange tree that enables it to produce oranges and juice, it being a working part that corresponds to VAPOT in any refrigeration installation. VAPOT is a small part (which we manufacture and supply) and what it does is defrost and eliminate ice without costly, excessive temperature rise.

If you build, sell, buy or engineer refrigeration—or are interested in refrigeration from the architect's viewpoint—you truly should write for our free technical data on VAPOT. It is one of many specialties used in refrigeration and air conditioning . . . made by us.



SINCE 1932

REFRIGERATION ENGINEERING, INC.
7250 E. Slouson Ave., Los Angeles 22, Calif.

Phone: RAymond 3-3281

—KEY NO. G-2119—

CONTROL TO PROTECT coil from freeze-up during adverse operating conditions is feature of new 3-ton air conditioner introduced by Mueller Climatrol at Builder's Show, Elmore Scheck, Mueller regional sales manager (l.), tells Emil Tsolas, Watertown, Mass. electrical contractor.



—KEY NO. G-2123—

"AUTOMATIC HOUSEKEEPER" electronic air cleaning unit introduced to builders by Trian, Inc. is demonstrated by model Joan Milan. Made in six models ranging in capacity from 1,000 to 9,600 c.f.m., the units fit any central air conditioning system from 3 to 25 tons.



—KEY NO. G-2124—

NEW BUILT-IN DAMPER is easily removed from "Kno-Draft" ceiling air diffuser, Harold Todd, Jr. (r.), residential sales manager for Connor Engineering Corp., demonstrates for Lou Reining, Chicago residential representative. Damper is balanced by simply turning control knob.



—KEY NO. G-2120—

CONCO "MODULUX" is first year-round residential air conditioner to incorporate a system of face and by-pass dampers to provide continuous circulation of temperature controlled air. E. A. Phillips (l.), sales representative for Conco Engineering Works tells F. Neal Miller, builder from Iowa City.



—KEY NO. G-2121—

NEW "RHEEM GLASS" hi-boy warm air furnace with glass-lined combustion chamber and porcelainized heat exchanger pleases L. F. Nordgren, Rheem Mfg. Co. assistant advertising manager. He points out that it stands only 54 in. high, allowing room for a cooling coil on top.



WANTED REGIONAL SALES MANAGER FOR MIDWEST

The Gibson Refrigerator Company of Greenville, Michigan, has an opening for a capable man who has a complete knowledge of the commercial and residential air conditioning and heating business. The man we want must have experience in selling 3 to 40 ton air conditioning equipment, oil and gas fired furnaces. To qualify, he should be of the executive type with ability to set up his own distribution. This position pays top money to the right man. Call or write J. L. Johnson, vice president, Gibson Refrigerator Company, Greenville, Michigan.



"Summer Shower" COOLING TOWERS

By breaking up both air and water into the smallest units, this lightweight all-metal cooling tower provides maximum efficiency and lengthens the life of the condenser. Inside the stucco-embossed aluminum body, the steel and aluminum is protected by either double-coated baked enamel or baked-on thermal plastic coatings. Resists rust and corrosion! The fan, motor and all plumbing parts are easily accessible for maintenance and the complete weight of this tower is so light it makes installation a cinch! Get the complete story now!

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me...there's a
better way to
keep 'em cool"

MITCHELL

ROOM AIR CONDITIONERS

DELIVER MORE COOLING

PER DOLLAR THAN
ANY OTHER MAKE!

CAPACITY BOOSTER
Delivers a cooling bonus
of 310 BTU's per hour.

ROTO CONE
Cools 21% faster by actual
test—with a totally new
Sweep-Cooling concept.

NEW 12 AMP
1 HP, 115 V CAPACITY—
6 different styles that
eliminate 230 v. line, yet
deliver king-sized cooling;
save 10% on operating
costs.

NEW 7 1/2 AMP
3/4 HP, 115 V UNIT—saves
40% on electricity costs,
saves rewiring costs, uses
less current than a toaster.

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List it in the
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NEWS' classified advertising columns.

(See Page 54)

"mother almost fell
off her roost when
she heard what

MITCHELL

hatched"



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**Roto Cone
Cooling!**

MAKES CONDITIONED AIR COME
ALIVE, COMPLETELY SURROUNDS
YOU WITH NATURAL COMFORT

GET ALL THE FACTS FROM YOUR MITCHELL DISTRIBUTOR
Mitchell Manufacturing Company—A division of Cory Corporation, 3200 W. Peterson Ave., Chicago, Ill.

• Cools 21% faster by
actual test. • Tailors the
air delivery with an
infinite range of settings.
• Exclusive Sweep-Cooling
concept sells itself—no hot
spots, no clammy areas, no
drafts. • Achieves the
ultimate in quiet operation.

What Happened In Fort Worth

49 Contractors Air Conditioned 1,616 Homes During 1956 To Top 1955 by 37%

(Concluded from Page 1)

whether 1956 installations would have been much ahead of the previous year without the efforts of Contractor No. 1, who claims 518 jobs alone. This is 32% of the 1956 total.

Some Firms' Sales Down Slightly

Aggressive sales efforts of this firm, which was organized late in 1955, may well have cost other contractors some installations, for a few of the latter chalked up any notable gains in 1956 over the preceding year. Some, in fact, were down from their 1955 figure.

Quite a number of contractors, however, expressed little if any concern over their slight drop in residential air conditioning sales during 1956, claiming that they had taken a long, hard look at the possibilities of making money in this market.

"Sure, we put in fewer jobs in '56, but we made more profit," said some.

It might also be thought that the general slowdown of new home construction during the past year could have had some effect on air conditioning sales, but this is not substantiated in the survey results.

564 New Home Buyers Chose Air Conditioning

These show that 564 systems were installed in new homes where the buyer of the house had the option of deciding whether or not to have air conditioning.

A total of 509 jobs went into "speculative" homes at the choice of the builder, and 543 systems were installed in existing homes, the 1956 survey shows.

Compared to an over-all gain of 37% for the year, "owner" installations were up 48% over the 1955 total of 381; "builder" installations were up 51% over the 337 in 1955, while "existing home" installations gained only 18% over the 461 recorded for this category in 1955.

It will be noted from the table that Contractor No. 1 accounted for the majority of installations for speculative builders, handling 310 of the 509 total. This firm also put in 156 of the 564 "owner" installations.

Most Systems Installed Were Year-Round Jobs

Most of the systems installed in Fort Worth during 1956 were year-round jobs involving both heating and cooling. There were 1,255 of these, compared with

361 "cooling only" installations.

All the gain of the 1956 installations over 1955, in fact, was accounted for in year-round systems. There were 802 of these in 1955 (compared with 377 "cooling only" jobs), which means an increase of 453 in this category in 1956. The over-all 1956 figure is up 437 over 1955.

As might be expected, nearly all of the 1956 installations employed air-cooled condensers. A total of 1,556 such systems, or 96% of the over-all figure, is reported for 1956.

Of the air-cooled systems, 1,502 had the condenser or compressor-condenser in remote location. Only 54 air-cooled systems were completely self-contained. A few of the latter were air-to-air heat pumps.

Sixty systems installed during 1956 were water-cooled, compared with 485 such the previous year. Of the 60 water-cooled jobs, 49 were equipped with cooling towers and nine with evaporative condensers.

A total of 29 gas-powered cooling systems was reported in the 1956 Fort Worth installations. Eleven of these were natural gas engine-driven system; 18 were absorption machines.

Air Conditioning, Refrigeration Mfrs. Score In 94% of Jobs

Based on the contractors' reports, air conditioning and refrigeration manufacturers, who dominated the Fort Worth market in 1955, gained even more ground last year.

These figures show that 17 manufacturers whose backgrounds are primarily in the air conditioning and/or refrigeration fields are represented by 1,523 installations in 1956, or 94.2% of the total.

Five "furnace companies" had

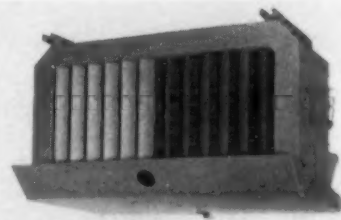
293 jobs between them for 5.8% of the 1956 total.

In 1955 the 18 air conditioning and refrigeration manufacturers involved were represented by 84.1% of the total while six furnace companies were represented by 15.9% of the jobs.

As for the contractors, included in the 49 listed in the 1956 survey are 10 firms that reported no residential installation for the previous year. Five of these firms, however, were set up during 1956 or late in 1955.

(Concluded on next page)

For BIG-JOB COOLING...and HUMIDITY CONTROL



KRACK MAGN-E-FEX UNIT KOOLERS

Ceiling mount permits full use of cold storage room space. Positive air circulation insures uniform temperature and humidity.

For low temp. storage and sharp freeze rooms you want top performing, low cost KRACK ZER-E-FEX WATER DEFROST UNIT KOOLERS.

Request free catalogs or see us at the I.H.&A.C. Exposition—Booth N-422.



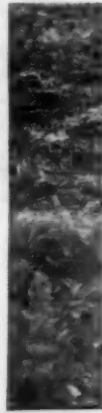
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7853 MONroe 6-1141

MAKE YOUR OWN SCALE REMOVER!

Galvanized strips dipped in acid solutions of equal strength.



Galvanize completely stripped in less than 30 minutes without Vapco-Hib.



Galvanize still intact after 24 hours in similar solution, but with Vapco-Hib.

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VAPCO-HIB ACID INHIBITOR

Just add it to muriatic acid. Gives fast, low cost descaling with unbelievable safety to metal surfaces—even galvanize!

NOW, FOR THE FIRST TIME—the low cost, fast descaling action of muriatic acid... with the safety of a dry powder cleaner. Vapco-Hib sets up a chemical reaction which forms a protective barrier on metal surfaces, yet does not retard cleaning action on scale deposits. Complete information and directions on bottle. Available in 8 oz. and 32 oz. sizes. Ask your wholesaler or write us today.

Other Vapco Products

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PRESSTITE PERMAGUM® Sealing Compound

- for sealing joints and seams
- for plugging and caulking in
- Supplied in beads, tape or bulk

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PRESSTITE-KEYSTONE Engineering Products COMPANY

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Residential Air Conditioning

Residential Air Conditioning In Fort Worth In 1956

Contractor	1956 Total	New Owner	Homes - Builder	Exist- ing Homes	Year- Round Systems	Cool- ing Only	—Air Cooled— Remote S.C.	Water Cooled	With Tower	Sheet Metal Shop
1	518	156	310	52	506	12	517	...	...	Yes
2	132	40	20	72	70	62	123	7	2	Yes
3	110	60	10	40	70	40	110	...	...	Yes
4	90	42	42	6	84	6	89	...	1	Yes
5	85	43	4	38	68	17	77	5	3	Yes
6	65	12	8	45	40	25	62	...	3	Yes
7	60	10	40	10	60	...	57	...	3	Yes
8	45	5	5	35	40	5	36	5	4	No
9	45	17	17	11	35	10	30	15	...	Yes
10	40	8	...	32	30	10	29	10	1	Yes
11	35	15	5	15	25	10	33	...	2	No
12	30	20	5	5	25	5	26	...	4	Yes
13	28	13	2	13	17	11	28	...	...	Yes
14	28	8	10	10	10	18	1	...	27	No
15	25	15	5	5	25	...	24	...	1	Yes
16	23	5	...	18	9	14	23	...	...	Yes
17	20	...	20	...	20	...	19	...	1	Yes
18	20	15	2	3	18	2	19	...	1	No
19	18	6	2	10	8	10	10	7	1	Yes
20	15	10	...	5	15	...	15	...	...	No
21	15	3	...	12	13	2	9	3	3	No
22	15	5	...	10	5	10	15	...	...	No
23	15	5	...	10	4	11	15	...	...	Yes
24	12	4	...	8	4	8	12	...	...	Yes
25	12	6	...	6	6	6	12	...	...	No
26	12	8	2	2	9	3	11	1	...	No
27	10	5	...	5	5	5	10	...	...	No
28	10	5	...	5	5	5	9	...	1	No
29	8	4	...	4	4	4	8	...	...	No
30	8	2	...	6	2	6	8	...	...	No
31	8	2	...	6	2	6	7	...	1	Yes
32	6	6	...	...	6	...	5	...	1	No
33	5	2	...	3	4	1	4	1	...	No
34	5	...	...	5	1	4	5	...	...	No
35	4	2	...	2	2	2	4	...	...	No
36	4	4	...	...	4	...	4	...	...	Yes
37	4	...	...	4	...	4	4	...	...	No
38	4	...	...	4	...	4	4	...	...	No
39	4	...	...	4	...	4	4	...	...	No
40	4	...	...	4	...	4	4	...	...	No
41	4	...	...	4	2	2	4	...	...	No
42	4	...	...	4	...	4	4	...	...	Yes
43	2	...	...	2	...	2	2	...	...	No
44	2	...	...	2	...	2	2	...	...	No
45	2	...	...	2	...	2	2	...	...	No
46	2	...	...	2	1	1	2	...	...	Yes
47	1	...	...	1	...	1	1	...	...	No
48	1	1	...	...	1	...	1	...	...	No
49	1	...	...	1	...	1	1	...	...	No
Total	1,616	564	509	543	1,255	361	1,502	54	60	58

*Nine were evaporative condensers.

Fort Worth--

(Concluded from preceding page)

Four contractors whose 1956 installations are listed in the accompanying table are no longer in business. The 1956 Fort Worth survey may be significant in pointing up the success of the "air conditioning specialist" in the resi-

dential field. The top 10 firms, who between them accounted for 1,190 of the 1,616 jobs, could well be considered specialists in air conditioning.

Some of these 10 contractors specialize in residential air conditioning almost exclusively while the others are also active in commercial applications of air conditioning. A few engage in refrigeration installation and service as well.

As has been pointed out in the previous Fort Worth surveys, little if any significance can be attached to any comparison between sales of residential air conditioning by air conditioning and refrigeration firms and those by heating contractors.

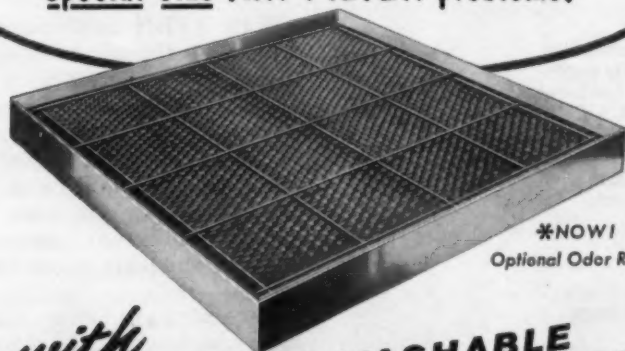
Before the advent of residential cooling, central heating was relatively limited in the area, most of the homes being heated by gas space heaters. There were, therefore, comparatively few firms in the area actively engaged in residential central heating prior to the boom in residential air conditioning.

(To Be Reprinted)

Clark Opens Canadian Plant

CLEVELAND—A new 70,000-sq. ft. plant has been opened in Scarborough, Ont., Can., a part of Metropolitan Toronto, by Canadian Controllers, Ltd., a subsidiary of Clark Controller Co., Cleveland, it was announced.

Here's how to end
special size AIR FILTER problems!



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Optional Odor Removal

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E Z KLEEN WASHABLE
ALUMINUM
Air Filters

For filter sales or filter service, E Z Kleen aluminum washable air filters for air conditioners fit your profit picture perfectly. They permit a reduced inventory...result in fewer call-backs...require less storage space. With home service by customers, you profit from sale of R P Handi-Koter adhesive or R P Super Handi-Koter*, fast-selling, replacement items. Or...you can establish a profitable service business. Whatever your type operation, E Z Kleens are the answer! In 1/2", 1", or 2" thicknesses.



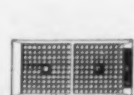
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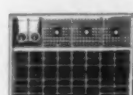
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For more information about products advertised on this page use Information Center, page 42.

7 COMPLETE SERIES 31 MODELS



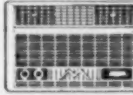
Pancake
Low and thin
1/2, 1 hp.



Ultra-Thin
Thinnest unit yet
1/2, 1, 1 1/2 hp.



Caseament
Rated 1st in cooling power
1/2, 1 hp.



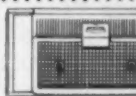
Power Pack "24"
2 feet narrow
1/2, 1 hp.



Roto Cone
New Sweep-Cooling feature
1/2, 1, 1 1/2, 2 hp.



Advance
Hottest prices in air
conditioning
1/2, 1, 1 1/2 and 2 hp.



Imperial
The world's most powerful
room air conditioner
1/2, 2 hp.

GET ALL THE FACTS FROM YOUR
MITCHELL DISTRIBUTOR

"MITCHELL
the greatest thing
I've ever seen
since that fellow
who used to
swim in here"



Mitchell Manufacturing Company—A division of Cory Corporation, 3200 W. Peterson Ave., Chicago, Ill.

ARE you in need of a "just right"

man to fill a slot in your organization—the man you
are looking for will be reading the

NEWS' CLASSIFIED ADS

(See Page 54)



"MITCHELL
'operation
saturation
advertising'
is bigger than
both of
us!"

IT'S THE LARGEST
(OVER \$1,000,000 LOCAL
DOLLARS) LOCAL CAMPAIGN
EVER AIMED AT YOUR MARKET

• Packs the punch of over 1,000,000 local lines and local dollars. • Pyramids the power of newspapers, radio and television into volume sales profit. • 100% distributor paid, if you act now! • Sell the big plus: Roto Cone, the exclusive Sweep-Cooling concept that sells on sight.

GET ALL THE FACTS FROM YOUR MITCHELL DISTRIBUTOR
Mitchell Manufacturing Company—A division of Cory Corporation, 3200 W. Peterson Ave., Chicago, Ill.

Worthington Relates Shop Work to Class In First Cooling, Refrigeration School

EAST ORANGE, N. J.—The first of a series of school sessions for air conditioning and refrigeration maintenance engineers was held recently at Worthington Corp.'s Air Conditioning and Refrigeration Service Training Center at the Ampere Works here.

The week-long agenda covered the principles of refrigeration, the components of the system, control systems, trouble-shooting, and "the Planned Maintenance Program."

According to E. D. Lindsley, manager of the division's Technical Service Section, the program consisted of not only classroom instruction, but related shop work to augment and reinforce the material presented in the classrooms.

The first session was attended

by 30 maintenance engineers from various organizations using Worthington air conditioning and refrigeration equipment for either comfort cooling, process manufacturing, food freezing, cold storage, etc. Some of the organizations represented were General Insurance Co. of America; Pacific Bell Telephone Co.; Bethlehem Steel Co.; Carbide & Carbon Chemical Corp.; Pet Milk Co.; several aircraft companies, arsenals, and others.

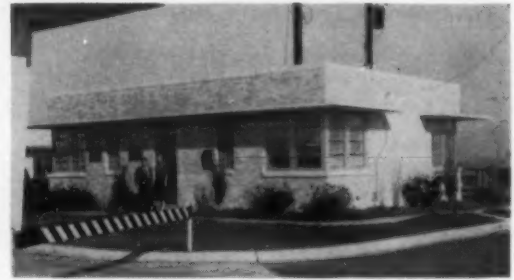
Lindsley said Worthington plans to conduct two such clinics each year. The sessions run for one week in the spring and in the fall. If the applications for attendance grow sufficiently, the company is considering conducting three, or possibly four one-year sessions per week. The

week-long sessions will, however, be limited to approximately 30 applicants, so that each may receive full benefit of working with a small group.

The next session is planned for April 1957.

Matthew M. Lawler, vice president in charge of Worthington's Air Conditioning & Refrigeration Div., stated in a recent interview that most of the engineers attending the school are experienced operating and maintenance engineers. The Worthington clinic has been inaugurated to keep these men abreast of the very rapid advances in this field, he said.

Bringing these engineers abreast of the latest developments, Lawler said, benefits the equipment user in getting longer life from his capital goods investment, and possibly even more important, acts as insurance against equipment failures resulting in loss of production time.



SOUTH TOLL PLAZA, one of two administration buildings heated and air conditioned by a heat pump at Lake Pontchartrain Causeway.

Heat Pumps Condition Causeway Administration Bldgs. Year-Round

CORINGTON, La. — Heat pumps give year-round air conditioning to two administration buildings located at either end of the new 24-mile-long Lake Pontchartrain Causeway in New Orleans, said to be the longest bridge in the world.

Pechon Plumbing & Heating Mechanical Contractors were

awarded the heat pump contract after Palmer & Baker, Inc., of Mobile, Ala. and New Orleans, conceived the design for the causeway that permitted the contractor to adapt all construction to mass production methods, it was indicated.

Much of the engineering and design credit for this water-to-air heat pump installation is awarded to Iddo Lampton and Bernard Jeskin of Enochs Sales Co., refrigeration wholesaler in New Orleans, who sold the units to Pechon.

DECIDES ELECTRIC HEATING, COOLING 'SAFEST, CLEANEST'

With the entire causeway built to latest engineering design, the building contractor decided electric heat and cooling was "the safest and cleanest" possible, it was explained. So it was planned to use heat pumps in both the North and South Administration buildings at the extreme ends of the causeway.

Water for condensing is approximately 75° F. for 12 months of the year, it was pointed out. Since this is considered to be "ideal" for both cooling and heating, Pechon purchased two "ACI-H-30" 3-hp. heat pumps, made by American Coils Co., through Enochs.

It was explained that a 20° T.D. is taken on the cooling cycle and 8° T.D. on the heating cycle which allows the 220-v., 60-cycle, single-phase heat pump to maintain an average inside temperature of 72°-74° during the cold season.

HAVE AUTOMATIC REVERSE OPERATION

Both ACI-H heat pumps installed in these administration offices are equipped with automatic changeover from cooling to heating, it was pointed out. This is said to be essential in areas where evenings and mornings are chilly and heat is required, but the temperature changes suddenly when the sun arises.

According to Pete Hatcher, sales manager of American Coils, such an arrangement allows an even temperature throughout all seasonal conditions.

Over 3,000 engineers from all over the world are claimed to have visited this project, which was completed last August. Many have written requesting addition data on the ACI-H heat pumps for future building plans.

Files Business Name

BUFFALO—A business name has been filed in the Erie County clerk's office for Slenk Heating & Air Conditioning, 116 Howell St., by John L. Slenk.

Your Invitation

From the
OFFICERS AND DIRECTORS
of the
WESTERN AIR CONDITIONING
INDUSTRIES ASSOCIATION
to exhibit in the
WESTERN AIR CONDITIONING, VENTILATING
AND REFRIGERATION
Conference and Exhibit
SHRINE EXPOSITION HALL,
Los Angeles, May 4-8, 1957

A TRULY GREAT SHOW... THE TREMENDOUS SALES POTENTIAL
IN THE COUNTRY'S MOST RAPIDLY EXPANDING MARKET... THE
11 WESTERN STATES... ASSURES ITS SUCCESS...

If you are a manufacturer or distributor of air conditioning, heating, ventilating or refrigeration equipment, parts or accessories, take advantage of the predictions of established business reports that "AIR CONDITIONING AND RELATED INDUSTRIES CAN EXPECT SHARP UPWARD TREND IN 1957."

A unique and far-reaching promotion and publicity campaign guarantees QUALITY attendance of potential customers.

Architects... contractors... engineers...

Those responsible for the successful operation of

Industrial Plants...

Retail Establishments...

Federal, State, Municipal or private office buildings...

Hotels and Motels...

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or other businesses who must meet the constant demands of competition with new or modernized equipment...

Individuals who are building or renovating their homes...

Will receive special invitations to see the most recent advances in YOUR industry...

FIVE BIG DAYS to sell your products and services in a one-stop, multi-sales call...

Plan now to exhibit in...

Western AIR CONDITIONING, HEATING, VENTILATING AND REFRIGERATION Exhibit and Conference

For further information, contact: Fred J. Tabery, Exhibit Manager
3443 So. Hill Street, Los Angeles 7, California, Richmond 9-1091.



CUSTOMERS can use both sides of these self-service low temperature display cases located in the Thriftway Market, Raytown, Mo.

Four Low-Temperature Self-Service Display Cases Up Store's Meat Sales

RAYTOWN, Mo. — Eliminating the "one-sidedness" factor of refrigerated self-service meat display in favor of an open island layout was the purpose of a Tyler refrigeration installation recently completed by the Thriftway Supermarket here.

Thriftway, operating four supermarkets in the suburban Kansas City area, feels that the ordinary method of using self-service refrigerated display cases up against the wall of the supermarket is wasteful.

"At least half of the selling area of the case is closed off to traffic since it is up against the wall," manager Bill Higginbottom indicated.

"In designing our Raytown store, we felt that moving the cases out into the center of the store and allowing customers to use both sides and the end as well in making their selections would save time and encourage bigger unit purchases.

The result was the installation of four 24-ft. Tyler low temperature self-service cases, which are laid out in a double row, down the center of the store, running across its width. All the cases were finished in a salmon shade.

Overhead lighting fixtures were brought down within a few feet of the cases and their light diffused by means of an "egg crate" false ceiling suspended below the lighting fixtures.

Finished in the same color as the cases, and using "pink light," the combination lends a lot of extra eye appeal to meats, Higginbottom reports.

With meat sales more than 30% ahead of the anticipated volume, Higginbottom credits the increase to several points.

Commercial Refrigeration Mfrs. Agents Form Firm

NEW YORK CITY—Sol and Mike Sumberg recently formed a new company here as manufacturers' agents in commercial refrigeration, it was reported.

Sumberg Sales Co., representing La Crosse Cooler Co., Kipp Mfg. Co., L. L. Rowe Co., Morton Show Case Co., and Southern Stainless Steel Wire Co., has opened offices at 280 Madison Ave.

Sol Sumberg, with an office at 1775 Broadway, has represented La Crosse and Rowe for the last 25 years.

Airtemp Names Dealer

COLUMBIA, S. C.—Columbia Chrysler Airtemp Sales, Inc., 1015 Berea Rd., has been appointed a dealer for Chrysler Airtemp residential and room air conditioning.

"in duplicate," with one display facing to the right side and the next one with exactly the same signs and merchandise to the left. In this way, the customer can read all of the signs without craning her head.

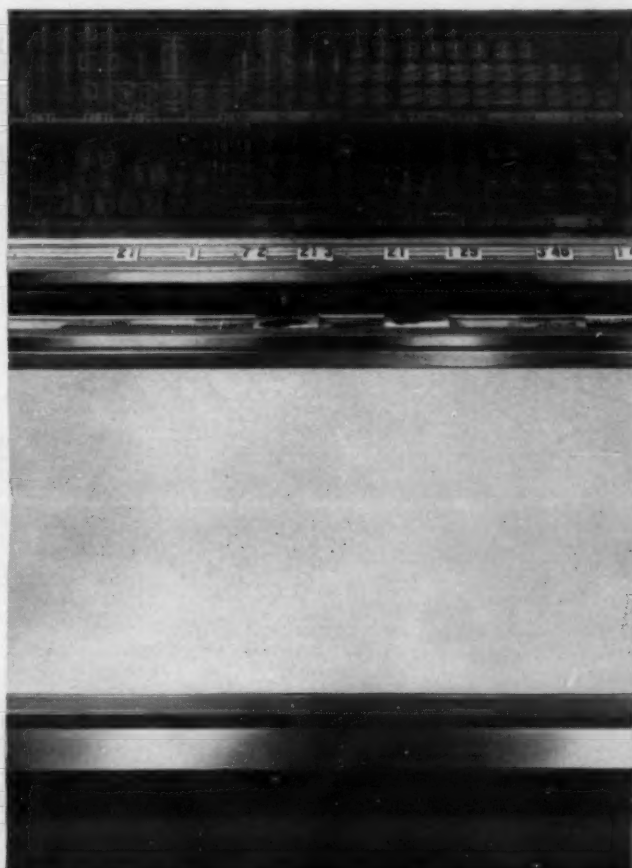
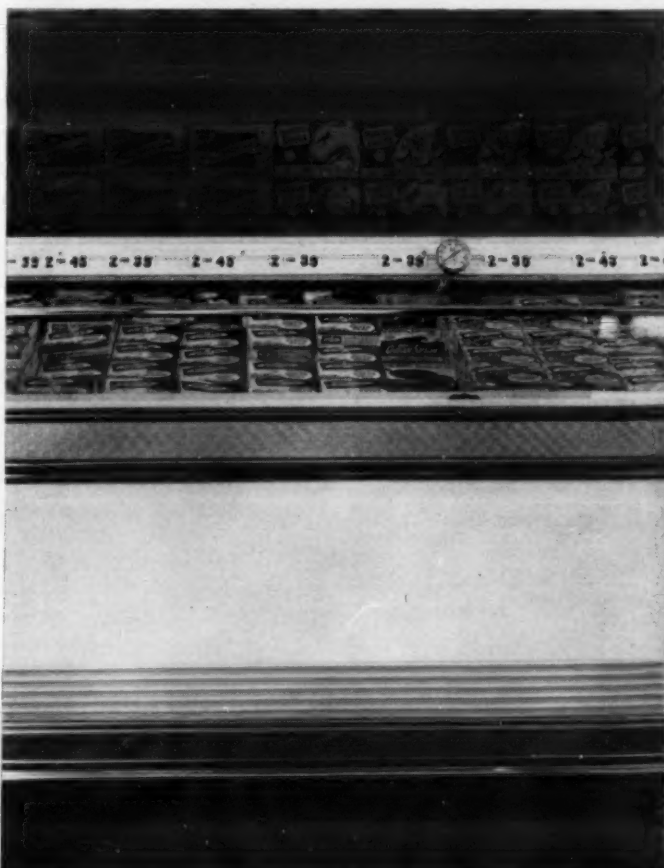
The 8-ft. aisle in between the cases insures that no matter how heavy the traffic is, customers can push their shopping carts through without jams and minor collisions which irritate the customer.

One case is devoted entirely to fancy meats, another to poultry and fish, a third to cured meats, and a fourth to smoked meats and steaks, roasts, etc.

A tiny telephone mounted at the end of each of the four display cases makes it possible for the housewife to telephone any of four butchers in the meat cutting and packing room on the other side of the rear partition for special orders and requests.



THESE people attended the field supervisors' meeting at Koch Refrigerators, Inc. in Kansas City, Mo. in late December. Back row, l. to r.: T. U. Cowger, Sam Carson, Frank Kirk, Wyot Segler, Phil Thompson, Carl Casterline, R. M. Bell, vice president, Harold V. Smith, Norv Meek, and John Carlson. Front row l. to r.: A. C. Wallahan, John Harris, sales, Millard Mayer, board chairman, C. K. Litman, president, Louise A. K. Frolich, food service specialist, Harold Wain, vice president-sales, Carl Corbin, and Arthur E. W. Miller.



PHOTOS WERE TAKEN from the average woman's eye level (5 ft.), and exactly 8 ft. from the cases. With Thermopane® insulating glass, you SEE the frozen foods in case at left. Without Thermopane, at right, you barely can.

Eye-level photos show how you get

MORE DISPLAY WITH THERMOPANE

You know the value of display. Does it make sense to hide your higher profit items—frozen foods—in a well between two walls of steel?

In refrigerated cases with "see-thru" fronts of Thermopane insulating glass, frozen food products and brands can be spotted by customers six feet, eight feet, or ten feet away. Thermopane stimulates impulse buying.

Next time you look at refrigerated cases, look at them as your customers do. See how much more display you get with Thermopane. All leading manufacturers use Thermopane. For their names, write Libbey-Owens-Ford Glass Co., 608 Madison Ave., Toledo 3, Ohio.

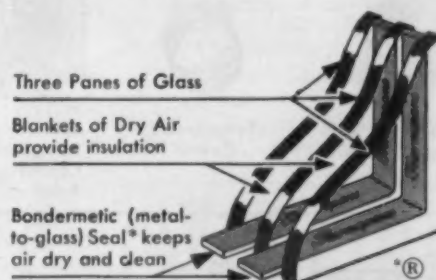
Thermopane
INSULATING GLASS

LIBBEY • OWENS • FORD... a Great Name in Glass

NO ORGANIC MATERIAL

Only Thermopane has the famous Bondermetic Seal® which prevents condensation between the panes of glass and keeps out dirt. It is a metal-to-glass seal. There is no organic material to deteriorate.

Look for the name imprinted on the seal between the panes.



Hermetic Compressor Design, Development (1)

Packaged Air Conditioning Growth Broadens Compressor Range; Expert Explains Factors Involved In Need For Larger Sizes

Accelerated growth of packaged air conditioning, particularly in the residential field, during recent years has been an important factor in broadening the range of hermetic compressors. Bigger and bigger sizes are being designed and manufactured.

Why this is happening is outlined in this article by Henri Soumerai of Worthington Corp., who traces the development of the hermetic or "seal-less" compressor and goes on to explain numerous design and application factors involved.

By Henri Soumerai, Worthington Corp.*

Hermetic compressors are much more difficult to manufacture, apply, and install than conventional open type machines. As a matter of fact, whenever you come across an article on

hermetic compressors you can be almost sure that the author is going to list an impressive number of pitfalls, do's and don'ts. Yet in spite of these difficulties, the trend is more and more towards hermetics and away from conventional open type compressors.

*Presented before the Connecticut Valley section, American Society of Refrigerating Engineers.

This trend got its start in the Thirties with a large scale production of fractional hermetic compressors for household refrigerators. Today hermetic compressors are produced in sizes up to several hundred horsepower; most compressor types are represented: rotary, reciprocating, and centrifugal, etc.

Now you may well ask: Why this trend? If hermetics are so fussy, why build them? The answer boils down to this: In many refrigeration and air conditioning applications a hermetic compressor will do a better job for less money than the conventional open-type machine.

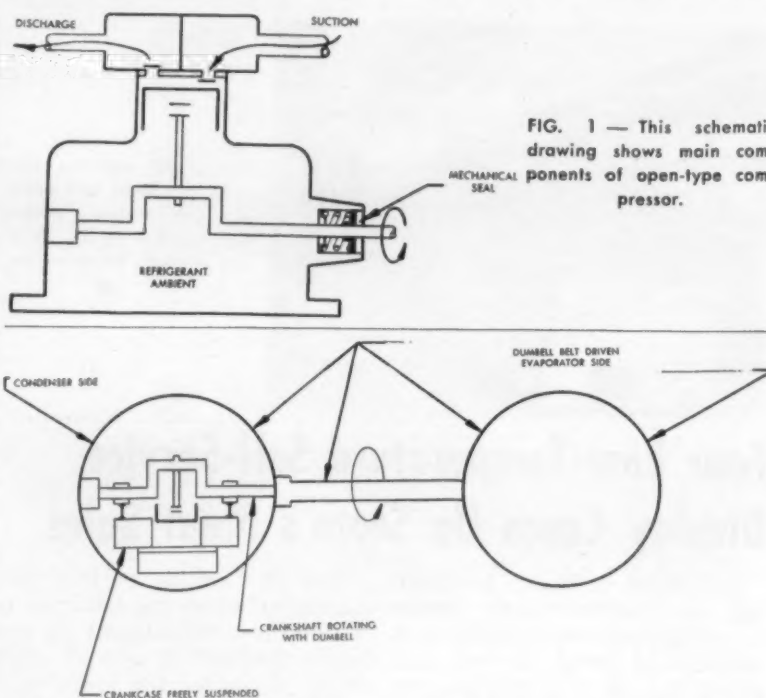
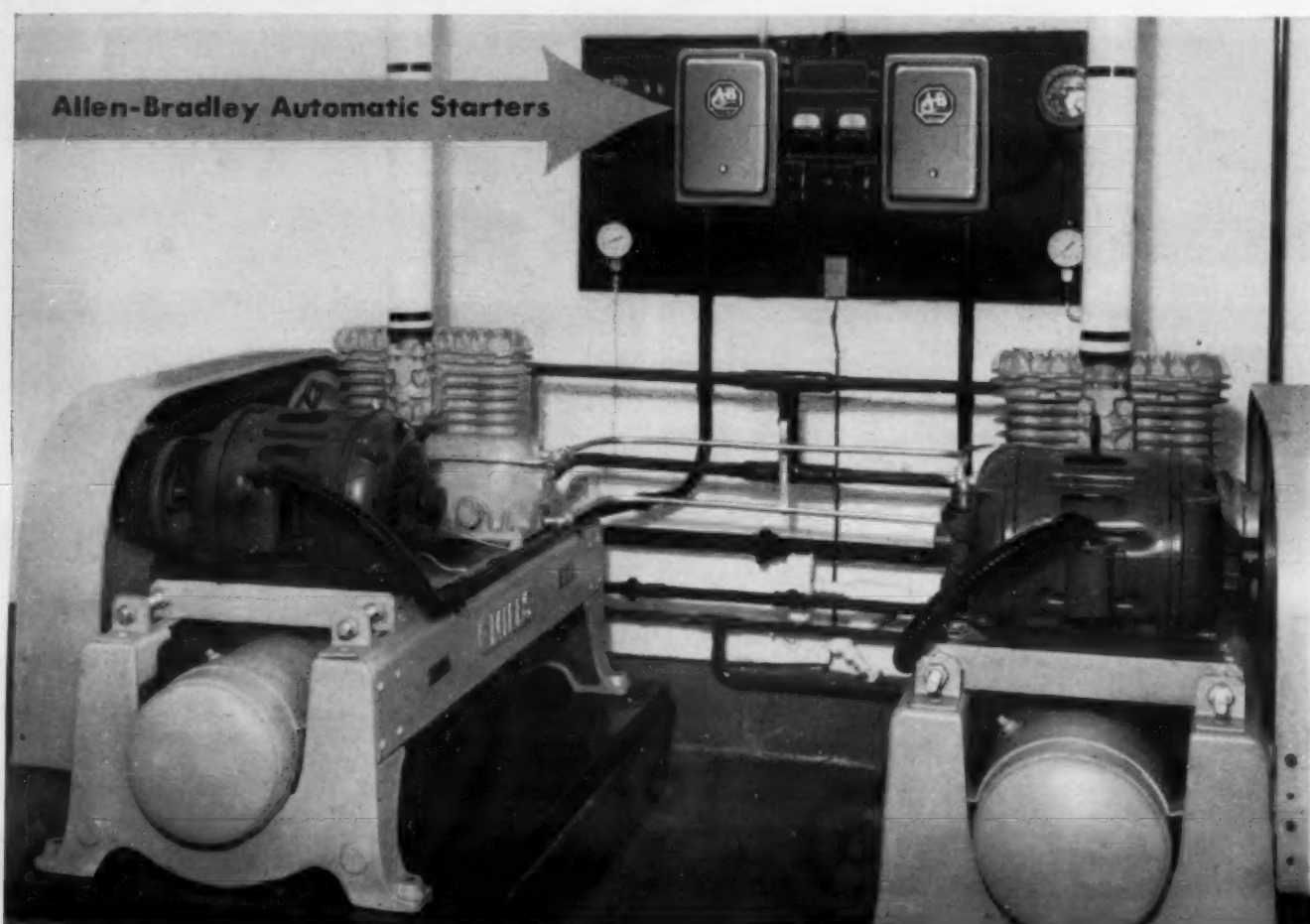


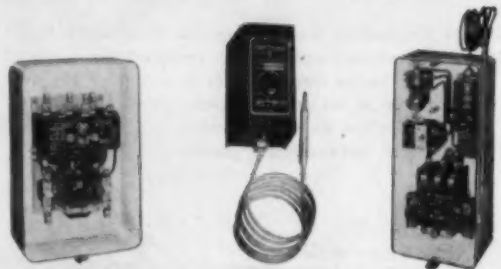
FIG. 1 — This schematic drawing shows main components of open-type compressor.

FIG. 2—Audiffren hermetic depended on gravity. Seal-less compressor was belt driven by motor outside.



REFRIGERATION MOTOR CONTROLS that are Trouble Free

TYPICAL ALLEN-BRADLEY REFRIGERATION CONTROLS



Bulletin 709 Automatic Solenoid Starter

Temperature Control

Special Refrigeration Control Panel

Why are Allen-Bradley automatic starters so popular for refrigeration and air-conditioning service?... Because they are so trouble free and dependable. Why are they trouble free? Because all A-B starters have only ONE moving part. No pivots, pins, or bearings to corrode or stick... no jumpers to break. You install them... and forget them! No contact maintenance... Allen-Bradley cadmium silver alloy contacts never need cleaning, filing, or dressing. A time-saving and money-saving "plus value."

Dependable overload relays... Allen-Bradley thermal relays are accurate and remain accurate "on the job"... even after years and years of service. The Allen-Bradley trademark stands for "Quality" in motor control. Remember to specify Allen-Bradley—over the years you'll be money ahead!

Allen-Bradley Co.
1313 S. First St., Milwaukee 4, Wis.
In Canada—Allen-Bradley Canada Limited, Galt, Ont.



ALLEN-BRADLEY SOLENOID MOTOR CONTROL

QUALITY

The purpose of this discussion is to show why such machines are particularly well suited for package air conditioning applications and describe some of the design features which have been incorporated in Worthington's accessible hermetic compressors. But before we do this let us make sure that we all think of the same thing when we talk about hermetic compressors.

OPEN-TYPE OR SEAL-TYPE COMPRESSORS

A schematic drawing of a conventional open-type refrigeration compressor is shown on Fig. 1. This compressor, like any other type, has just one function, i.e., to pump gas from the "low side" where the refrigerant vapor is generated at a "low" pressure and compress it to a discharge pressure corresponding to the condensing temperature.

In order to operate properly, the complete refrigeration system must be perfectly tight so as to keep the refrigerant inside and prevent air and moisture from getting into the system. Now, if you look at a conventional refrigeration cycle you will see that all the joints, except one, are stationary, i.e., there is no movement between mating parts. Such stationary joints are relatively easy to seal with gaskets and O-rings or by soldering, brazing, and welding.

The only exception is the seal between the crankcase and the rotating crankshaft. Since the conventional open-type machine is driven by an external motor, some form of mechanical seal must be used to prevent leaks at the point where the crankshaft breaks through the crankcase.

In the early days of the household refrigeration industry, these mechanical seals were a frequent cause of failure and service calls. The first hermetic compressors were developed to eliminate this trouble by eliminating the seal. It might have been less confusing to call them "seal-less" compressors.

HERMETIC OR SEAL-LESS COMPRESSOR

Hermetic compressors were already produced in small quantities at the beginning of the century. The operating principle of the first seal-less compressor

(Continued on next page)

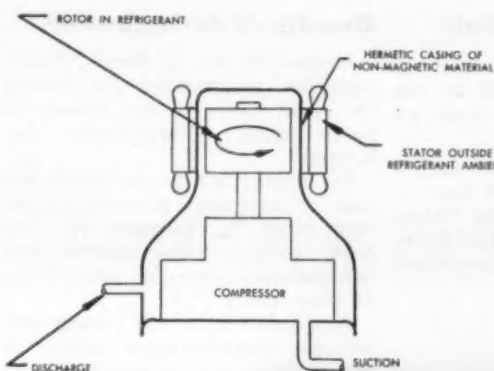


FIG. 3—Seal is eliminated in this design by employing stator outside hermetic casing made of non-magnetic material.

FIG. 4—This shows principle of Fig. 3 as actually manufactured by one firm in Switzerland today.

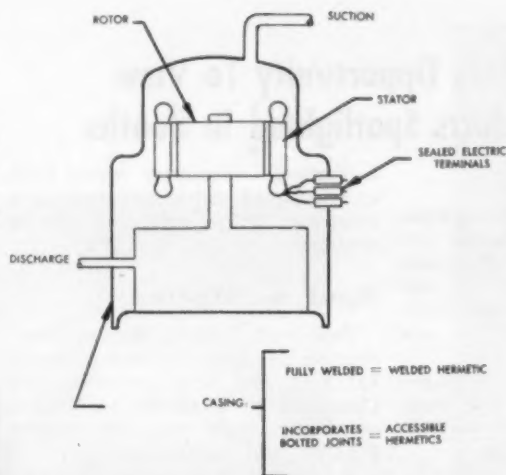
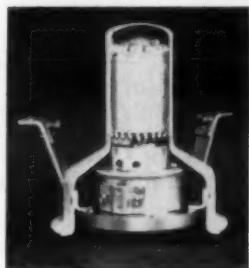


FIG. 5—Shows schematically the typical hermetic compressor of the U. S.

Hermetic Units--

(Continued from preceding page)

sor is shown on Fig. 2. In this case the designer Abbe Audifren made use of the force of gravity to eliminate the seal. The compressor, evaporator, and condenser are built in a casing which has the shape of a dumbbell. The dumbbell is rotated by an external belt drive; the crankshaft is rigidly secured to the casing and rotates with it.

The crankshaft on the other hand being freely suspended on the crankshaft, like a pendulum, does not rotate. This results in a reciprocating motion of the piston in the cylinder in just the same way as in a conventional machine.

Another step in the development of hermetic compressors was the elimination of the seal by the use of magnetic forces. In this case (Fig. 3) the compressor and the moving part of the motor, i.e. the rotor, are enclosed in a sealed casing. The motor winding on the stator is outside of refrigerant ambient.

This type of sealed unit is not produced at the present time in this country except as a liquid pump. In Europe at least one manufacturer still produces this type of compressor for household appliances. The main features are shown on Fig. 4.

One of the advantages of this design is that standard materials can be used for the stator winding; also in the case of motor burn out there is no possibility of contaminating the refrigerating system and it is easy to replace the stator.

Compressor manufacturers in this country finally "took the bull by the horns" and sealed both the rotor and stator in the refrigerant ambient (Fig. 5). The electrical terminals are now the points where power is introduced into the system. You might say that in this type of compressor the conventional crankshaft mechanical seal has been replaced by some stationary seals at the terminals. All hermetic compressors built in this country are of the latter type.

There are many variations in design such as: rotary, reciprocating, centrifugal, horizontal or vertical crankshaft, externally or internally spring mounted in the casings.

We talk of "fully sealed" or "welded" units when the casing must be cut open in order to gain access to the internal parts

of the compressor. Some designs called "semi-hermetics" or "accessible" hermetics incorpo-

rate a few bolted joints so field repairs can readily be made.

The only points that all these machines have in common is that the electric motor, as an integral part of the compressor, is sealed in a refrigerant atmosphere. The motor manufacturer has no control over the method of cooling the motor.

He must meet certain performance specifications on torques, efficiency, power factor, etc., but it is the responsibility of the compressor designer to provide satisfactory means of cooling the motor and proper protection.

(To Be Continued)

(To Be Reprinted)

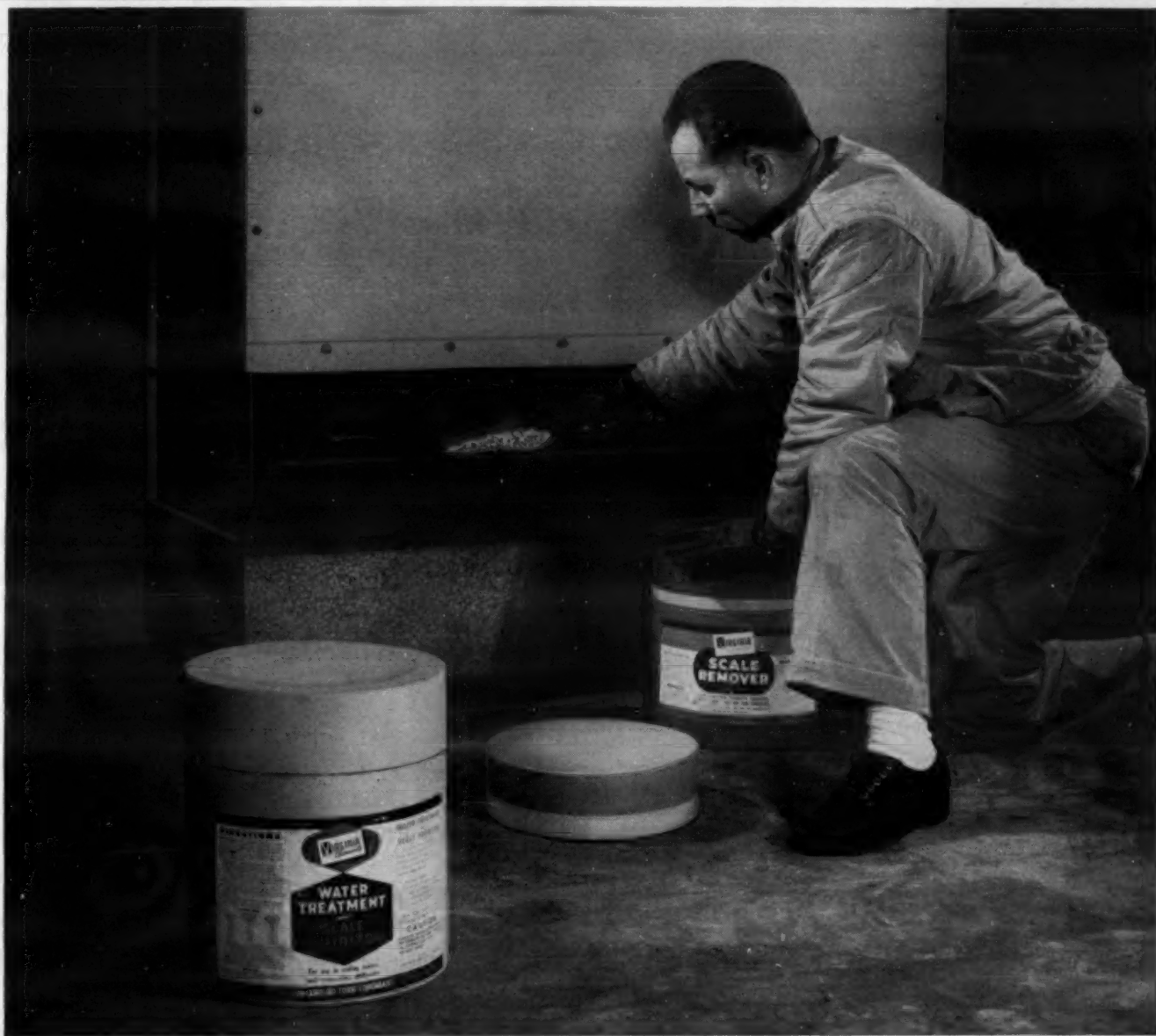
Wolverine Mill Depot Opens In Georgia Area

NEW YORK CITY—Wolverine Tube has opened new office and mill depot facilities in Atlanta, it was announced by F. F. Moore, assistant eastern district sales manager.

The new mill depot will enable Wolverine to better serve customers in the Georgia area, he said. It stocks copper water tube, refrigeration tube, and automotive tube. G. S. Feild, will coordinate sales activities.

New Freezer Unit Begun

ROGERS, Ark.—Construction has begun on a new \$500,000 freezer unit for Ward Ice Co. here. It will include a new building 220 by 111 ft. and will give the company a total storage of 10 million pounds of frozen foods.



"Virginia's" new scale remover & scale inhibitor restore and maintain maximum heat transfer

Heat transfer efficiencies in water-cooled equipment can be maintained:

1. By scale and algae removal
2. By preventing formation of scale

These "Virginia" products are designed for corrective and preventive maintenance:

• "Virginia" Scale Remover (solid), a dry granular acid—safe to handle, and inhibited to protect expensive equipment without reducing its scale dissolving properties. It is an effective algicide. Packed in 10- and 50-pound drums. For use when water hardness is less than 200 p.p.m.

• "Virginia" Scale Remover (liquid), a blend based on hydrochloric acid, also effectively inhibited to reduce corrosion on metal surfaces. This product has 50% greater scale-dissolving capacity than similar cleaners. The wide-mouthed containers reduce the danger of splashing. Packed in 1-gallon glass bottles. For use under unusually hard water conditions.

• "Virginia" Water Treatment & Scale Inhibitor, recommended as a scale preventive in reconditioned or new equipment. It is a blend of glassy polyphosphates—nontoxic to humans or vegetable life. Requires no feeders—one treatment lasts 3 months or more. Slow, controlled solubility

is the secret. Recommended for use following scale removal from fouled equipment and in all new equipment. Packed in 6- and 50-pound containers.

Order these field-tested products from your wholesaler or write Refrigeration Division, VIRGINIA SMELTING CO., 154 Jefferson St., West Norfolk, Virginia.



ESOTOOL KINETIC CHEMICAL'S "FREON" REFRIGERANTS • V-METH-L CAN-O-GAS • PERMAGUM • PRESSTITE TAPE • KWIWRAP • SUNISO REFRIGERATION OILS • WATER TREATMENT CHEMICALS

Available in Canada and many other countries

Other new "Virginia" Water Treatment Products include Algae • Cides No. 1 and No. 2, and Ice Machine Cleaner.



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FOR HEAVY LOADS
OF SHORT DURATION**



Fourth Church of Christ Scientist
St. Louis, Missouri

Many of America's finest churches depend on DOLE Ice-Cels to provide the ultimate in air conditioned comfort for their congregation. Initial investment is small and operating costs are low. The compact design of the Ice-Cel Unit permits easy installation. Charging of the Ice-Cel can be accomplished at any time. A small condensing unit can operate all day and most of the night if desired.

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13th International Heating & Air Conditioning Exposition
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Ice-Cels are applicable for churches, offices, stores, theaters, auditoriums, cafeterias and mortuaries. . . Write for "Ice-Cels in Action"—a pictorial brochure—or Engineering Catalog BAE.

DOLE REFRIGERATING COMPANY
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In Canada:
Dole Refrigerating Products Limited
44 Elgin Street, Brantford, Ontario



Preview

Show Offers Visitors Opportunity To View Myriad New Products Spotlited In Booths

Barber-Colman

Barber-Colman Co. will exhibit for the first time in booths 711 and 715 an electronic temperature indicator, electronic recorder controller, new square and rectangular ceiling diffusers, and a new high-velocity air valve.

Other products to be displayed include electric and electronic temperature controls, and combustion safeguard equipment.

Copeland

Equipment to be shown by Copeland Refrigeration Corp. in booths 1220 and 1224 will include "F-12" and "F-22" welded motor-compressors, motor-compressors for extra low temperature commercial refrigeration, air-cooled condensing units, 10-hp. compressor, 10-hp. condensing unit for air conditioning use, commercial refrigeration condensing units for remote condenser applications, and truck condensing units.

Air-Maze

In booth 550, Air-Maze Corp. will exhibit its "Electromaze" electronic air cleaner with automatic service system, it was announced.

Also to be exhibited is the "Automaze" automatic curtain type air filter assembly and various viscous impingement type air filter panels, including the "Kleenflo," P-5, and dry type P-70.

Newest item to be shown is the P-70 dry type air filter panel washable in water, it was noted.

Dryomatic

Dryomatic Corp. will unveil its newly developed model 105 space dryer in booth 208.

Using electrically regenerated drying agents, the unit is claimed to be capable of maintaining humidities as low as 5% in 35,000 cu. ft. of space over a wide range of temperatures. The machine is designed for use in processing rooms, storage areas, cheese curing rooms, and similar locations.

In addition to its industrial line, Dryomatic will also show household dehumidifiers of both refrigeration and adsorption type, it was pointed out. Other features of the exhibit include application of dehumidifying equipment in guided missile launching sites.

Downing Steel Products

Downing Steel Products Co. will emphasize its "Super-Jet" gas conversion burner in booth N436.

This automatic unit is said to be easy to install and is equipped with a self-generating control system, needing no electricity.

A-J Mfg.

A-J Mfg. Co. will exhibit air conditioning registers, grilles, and accessories in its booths 621-623.

Other items to be shown include architectural grilles, sight proof door and partition grilles, sight and light proof grilles, and all aluminum, all steel, or combination aluminum and steel registers, grilles, and diffusers.

Air Devices

Air Devices, Inc. plans to shine the spotlight on its "Agitair" air diffusers, filters, exhausters, and high-pressure terminals, in booth 1015.

A perimeter-type Agitair high-pressure terminal will feature the application of continuous "Strip-line" slot-type diffuser to show the control of high velocity air and unvaried distribution over its entire length.

Photos will show some interior views of the Agitair Air Research

& Testing Laboratory where each unit is tested and engineering data compiled. Other units will also be exhibited.

Paul S. Morton

Center of Paul S. Morton Engineering Service's display in booth 721 will be new "Payroll Tax Calculators," available in weekly or semi-monthly units for figuring F.I.C.A. and withholding tax.

A set of heating calculators, "Morton BTU," and "Morton Area and Volume" based on the air change method of figuring heat losses will be shown. Another set, "Morton's Btuh" and "Morton's Area and Crackage" calculator will also be displayed.

Wilson Mfg.

Wilson Mfg. Co. will show three flaring tools which have an automatic gauge and will flare nine sizes of tubing. One of the tools spins tubing with automatic burrishing.

A new complete ball bearing feed tubing cutter, a complete line of lever type tube benders that roll the tube around a mandrel and a new swedging tool will also be exhibited in booths N426 and N428.

Illinois Iron & Bolt

Featured in the Illinois Iron & Bolt Co.'s booth 207 will be the "Combustioneer" stoker made by the firm.

In addition, the firm will exhibit the Freeman stoker and have a live display of the Burdett "Radi-Heat" conversion burner and Freeman gas and oil-fired furnaces and incinerator.

Iron Fireman

Iron Fireman Mfg. Co. will highlight several models of commercial and industrial oil, gas, and gas-oil burners in booth 224.

New products to be displayed include "MicroMist" oil atomizing burner for heavy oils, including No. 5, with range of 3 to 25 g.p.h., and a commercial forced draft burner.

Petro

First public display of the new residential packaged boiler will be held by Petro in booth 125. The unit has no tubes.

In addition, several different models of commercial and industrial oil and combination gas-oil burners will be shown. New products offered will be an atomizing burner for heavy oils, including No. 5, with a range of 3 to 25 g.p.h., a completely packaged oil-fired hot water heating boiler which has output capacity of 114,000 B.t.u.h.

Bendix-Westinghouse

Evansville Div. of Bendix-Westinghouse Automotive Air Brake Co. will have as its theme in booth N301, "Compressors Unlimited."

On display will be the firm's full line of hermetic motor-compressors from ¼ through 7½ hp. Also, plastic dome models will demonstrate internal functioning of these units.

Suspended from the ceiling will be six representative types of compressors painted various colors which will rotate slowly.

Southwest Mfg.

Southwest Mfg. Co., subsidiary of F. E. Myers & Bro. Co., will present a redesigned forced air heating equipment line in booths 226-228.

In addition, the firm will show "Counter-Flo" models ranging in size from 80,000 to 160,000 B.t.u. input, "Hi-Boy" units passed for reduced clearances for closet installations ranging through the same capacities, and "Low-Boy" models ranging from 80,000 to 200,000 B.t.u. input.

1962 Mart Dates

CHICAGO—Dates of Jan. 8 to 18, 1962 for winter market, and June 18 to 28, 1962 for the summer market have been approved by the Joint Furniture Market Dates Committee.

The NEWS

cordially invites you

to drop by Booth No. 668,
International Amphitheatre in Chicago during the 13th International
Heating & Air Conditioning Exposition.

As usual, our booth will feature attractive young ladies, who will present you with your personal, complimentary copy of the brand-new 1957 Air Conditioning & Refrigeration Directory—your indispensable industry guide in handy, easy-to-use, reference size.

Also available to you will be copies of the February 18 and February 25 issues of AIR CONDITIONING & REFRIGERATION NEWS. They contain the latest information about the Exposition—products displayed, what to see at the Exposition, schedule of meetings—plus many other special feature articles of interest to you.

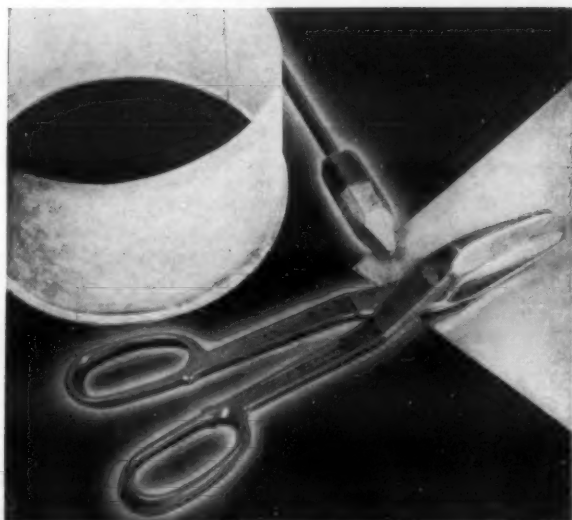
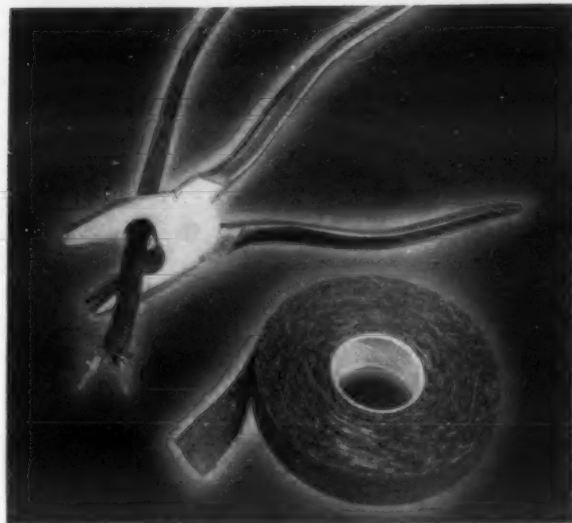
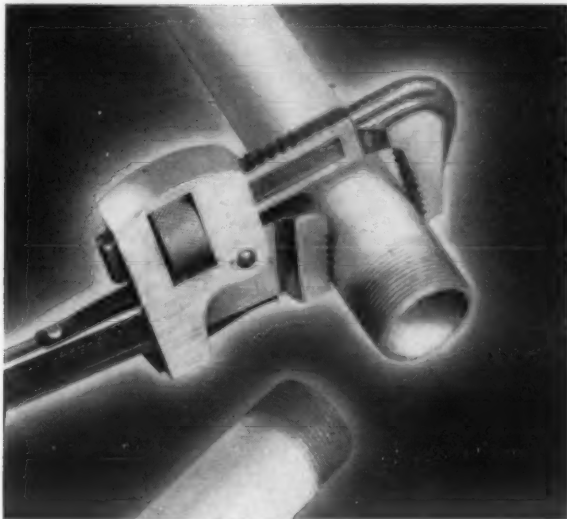
The News' Reference Library will carry samples of all the latest technical manuals including "Air Conditioning the Home"—the book most in demand in the residential field.

We will be seeing you in Chicago—Booth 668.

**AIR CONDITIONING
& REFRIGERATION**
THE NEWSPAPER OF THE INDUSTRY

NEWS





Which type of distribution will bring you the best results in the residential air conditioning market?



FROM every side, there is speculation on who will do the bulk of selling in the residential air conditioning field. They've all been named, from appliance dealer to electrical contractor, from plumber to venetian blind distributor.

The reason for this speculation: The industry must expand its distribution rapidly to meet the growing demand. This rapid expansion is bringing in new air conditioning dealers from many sources. And the NEWS is the only medium that can keep up with

this changing distribution pattern.

The NEWS is investing tens of thousands of dollars to select from appliance dealers, plumbing contractors, heating contractors and others, those who will be the important air conditioning contractors of tomorrow. These new subscribers prove their interest in the field by *paying* for their NEWS subscriptions—to get the help, news, and information they need to sell and install residential air conditioning. These new groups are turning to the NEWS because an air conditioning

dealer is an air conditioning dealer, whether he was once a furnace man, a refrigeration man, or whatever.

What better showcase for your selling message than in the one business paper which *seeks out and finds* the men doing residential air conditioning as no other publication can! For more information on how the NEWS can keep you in touch with your primary market, call your nearest NEWS representative or write direct:

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• CHICAGO, 134 S. LA SALLE ST.,
FRANKLIN 2-8098, AL SCHILDHAMMER.

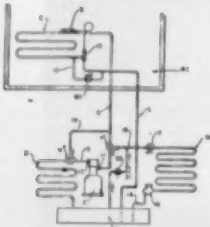
• LOS ANGELES, 4710 CRENSHAW BLVD.,
AXMINSTER 2-9501, JUSTIN HANNON.

• DETROIT, 450 WEST FORT ST.,
WOODWARD 2-0924, J. B. SULLIVAN.

PATENTS

Week of Sept. 18

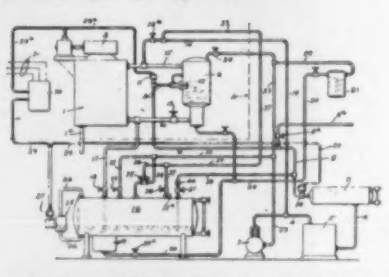
2,763,130. HOT GAS DEFOSTING SYSTEM. Ray M. Henderson, Bellaire, Tex. Application April 28, 1952, Serial No. 284,730. 12 Claims. (Cl. 62-3.)



11. In a refrigeration apparatus having a receiver for refrigerant, a first evaporator connected to the receiver through an expansion valve, and a compressor having its high side connected to the receiver and its low side connected to the evaporator during the refrigeration cycle, the combination therewith of a defrost system comprising a second evaporator connected to the receiver and obtaining liquid refrigerant therefrom during the defrost cycle, means regulating flow from the receiver into the second evaporator, valve means connecting the low side of the compressor to the outlet of the second evaporator and connecting the high side of the compressor to the first evaporator during the defrost cycle, means connecting the receiver to the system downstream of the second evaporator to bleed down pressure

in the receiver at the beginning of the defrost cycle, and valve means controlling flow through said connecting means.

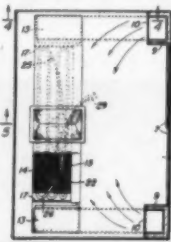
2,763,131. DEFOSTING MEANS FOR REFRIGERATING SYSTEMS. Ejnar Sorensen, Hollywood, Calif. Application Dec. 13, 1954, Serial No. 474,713. 12 Claims. (Cl. 62-3.)



10. In a refrigerating system including a compressor, a condenser, a liquid receiver, an evaporator and control means connected normally in refrigerant flow relationship; defrosting means including a tank, means for passing hot refrigerant into the evaporator; means for draining liquid from the evaporator into said tank; and means for conducting liquid from said tank to said evaporator independently of said liquid receiver, said means operable responsive to a predetermined level of liquid in said tank and the operation of said compressor.

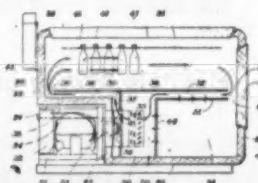
2,763,135. REFRIGERATED DISPLAY CASE. Frederick S. Holderle, Harvey C. E. Holderle, and Norbert F. W. Holderle, Rochester, N. Y. Application Nov. 13, 1954, Serial No. 469,656. 12 Claims. (Cl. 62-89.5.)

1. A display case including a refrigerating unit, a cold air chamber in communication on its top with the interior of the case, said cold air chamber including an end wall extending to near the bottom of the chamber and



having an outlet opening of reduced size between the bottom of said end wall and the bottom of the cold air chamber, cooling coils in said chamber connected with said refrigerating unit, a cooling duct at the rear of the case having a multiplicity of outlet openings in its front wall communicating with the interior of the case, a fan acting to draw air from said reduced outlet opening at the bottom of the cold air chamber and force such air to said cooling duct, an air conductor leading from said outlet opening at the bottom of said cold air chamber to said fan, and an air conductor leading from said fan to the bottom of said cooling duct.

2,763,136. DISPENSING REFRIGERATOR. Ellsworth C. Salisbury, Columbus, Ohio, assignor to Mundean Mfg. Co., Columbus, Ohio, a corporation of Ohio. Application Feb. 11, 1954, Serial No. 409,555. 4 Claims. (Cl. 62-102.)

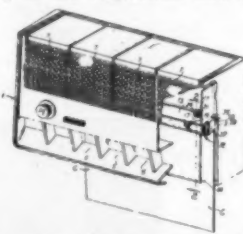


1. In combination, a refrigerating system comprising insulating walls forming top, bottom, and sides of a refrigerator cabinet; wall means within the cabinet separating the cabinet into an upper dispensing compartment, a cooling unit compartment below the dispensing compartment, a storage compartment below the dispensing compartment and alongside the cooling unit compartment, said wall means forming a passage for the flow of air from the cooling unit compartment to the dispensing compartment, said wall means including horizontally extending portions confronting one another and spaced from one another to provide an outlet passage for air below the dispensing compartment and above the storage compartment and leading from the dispensing compartment to the cooling unit compartment, one end of said passage terminating at and communicating with the cooling unit compartment and the other end of said passage terminating adjacent but spaced from a side wall of the cabinet and in communication with the dispensing compartment, said wall means including an impervious vertically extending portion dividing the lower part of the cabinet into said cooling unit compartment and said storage compartment, the upper end of said impervious portion terminating at the second-mentioned horizontally extending portion and the lower end of said impervious portion extending to the bottom of the cabinet; a cooling unit in said cooling unit compartment; and a fan for forcing air into the first-mentioned passage and for withdrawing air from the dispensing compartment through the second-mentioned passage.

2,763,139. ROOM AIR CONDITIONER FILTER SYSTEM. Robert J. Callan, Afton, and Ta-Hsien Kuo, St. Louis, Mo., assignors to Magic Chef, Inc., St. Louis, Mo., a corporation of New Jersey. Application March 10, 1954, Serial No. 415,304. 8 Claims. (Cl. 62-129.)

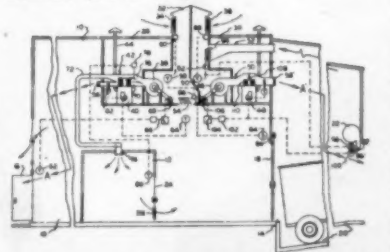
1. A room air conditioner comprising a base, an evaporator on the base, and a removable cabinet enclosing the eva-

porator, said cabinet having a lower opening in front of the evaporator, the top of the cabinet being spaced above the top of the evaporator and the front



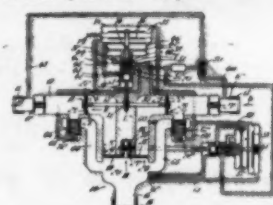
of the cabinet being spaced from the front of the evaporator, the cabinet having an upper air outlet, air being drawn through the evaporator from its front and flowing to the outlet over the top of the evaporator and through a passage beneath the top of the cabinet, a roll holder mounted at the top of the space between the front of the evaporator and the front of the cabinet for holding a roll of filter material with its axis generally horizontal and generally parallel to the front of the evaporator, and a guide for the filter material extending horizontally across the front of the evaporator, closely adjacent the top of the evaporator whereby a length of material extending from the roll may be trained over the guide to pass into filtering position down across the front of the evaporator to said lower opening for filtering air drawn through the evaporator, the end of the material being accessible through said lower opening for pulling it out of the cabinet to draw a fresh length of the material into filtering position.

2,763,195. AIR CONDITIONING OF ENTRANCE AREAS. William J. Caldwell, Independence, Mo. Application July 16, 1951, Serial No. 237,046. 3 Claims. (Cl. 98-33.)



1. In an air conditioning system, the combination with a building space having an entrance with adjustable closure means, of air pressurizing blower means having an inlet connection to the atmosphere outside of said building space, duct means connected between said air pressurizing means and said building space to conduct high velocity air toward said entrance, said building space including return air flow means, and a pair of separate control means each operatively connected with said pressurizing means and said return air flow means, respectively, to control the pressurization of said building space in compensating relation to the tendency for air filtration at said entrance, at least one of said control means being actuable by the adjustment of said closure means.

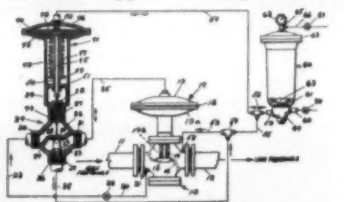
2,763,279. FLUID FLOW CONTROL DEVICES. Thomas Edward Godden, Edward Hollingworth Morris, and Alfred Herbert Walter Loynes, Gloucester, England, assignors to Rotol Limited, Gloucester, England, a British company. Application Nov. 16, 1951, Serial No. 256,684. Claims priority, application Great Britain. Dec. 22, 1950. 19 Claims. (Cl. 137-99.)



1. A device for maintaining a predetermined flow relationship between at least two fluid streams of variable mass flow in which one of the streams is at a pressure always less than the pressure of the other stream, comprising a conduit for each stream; a variable constriction in each conduit, said constrictions being variable together so that a constant ratio is always maintained between the effective areas of said constrictions corresponding to the desired flow relationship between said streams; pressure-regulating means including a pressure-regulating valve in the conduit of said other stream for regulating the fluid pressure on the upstream side of the con-

striction therein, the pressure fluid in said one stream being used as a datum for the adjustment of the pressure of fluid in said other stream, said pressure-regulating means being effective for maintaining the pressures on the upstream sides of said variable constrictions substantially equal to one another in all said conduits; a first control means responsive to variations in the difference of pressure between the variable constriction in said other stream and said pressure-regulating means for adjusting all of said variable constrictions together, said control means being effective for causing said variable constrictions to increase in area when said pressure difference rises above a predetermined value and to decrease in area when said pressure difference falls below said predetermined value; and a second control means responsive to variations in the difference of pressure between the constriction in said one stream and pressure-regulating means for controlling said pressure regulating means by comparing the pressures in said conduits whereby to adjust the regulating valve.

2,763,280. PRESSURE REGULATING SYSTEM. Robert E. Snyder, Pasadena, Calif. Application Sept. 12, 1950.



1. In a control system for use with a pressure regulating valve connected between a high pressure line and a low pressure line and having a motor element for adjusting said regulating valve, the combination of: a pilot valve; a pressure responsive element for operating said pilot valve; a pilot line connecting said pressure responsive element to said low pressure line; a power line connecting said pilot valve to said high pressure line; a control line connecting said pilot valve to said motor element; a drain line connected to said pilot valve, said pilot valve being operable in one limiting position to connect said control line to said power line and operable in the other limiting position to connect said control line to said drain line, said power line, control line, and drain line being interconnected in intermediate positions of said valve, said drain line being restricted, whereby the change in pressure in the upstream portion of said drain line resulting from operation of said pilot valve is in a direction opposite to the change in pressure in said control line; and means for applying the pressure change in the upstream portion of said drain line to said pressure responsive element.

2,763,470. HEAT EXCHANGER PIN FASTENER. George M. Certain, Tulsa, Okla.



1. In a finned tube for heat exchangers, including a tubular core and a fin strip helically wound thereon with its inner edge from end to end, continuously secured to the periphery of said core and its outer edge projecting radially from the core; an auxiliary fastening device for the opposite extremities of said strip, each comprising an anchoring member rigidly connected to the periphery of the core, a connecting member integral with said anchoring member, offset radially from the periphery of said core and terminating in a projection which transversely penetrates at least one helix of said fin strip.

(To Be Continued)

CLASSIFIED ADVERTISING

RATES for "Positions Wanted" \$7.50 per insertion. Limit 50 words. 15¢ per word over 50.

RATES for all other classifications \$10.00 per insertion. Limit 50 words. 20¢ per word over 50.

ADVERTISEMENTS set in usual classified style. Box addresses count as five words, other address by actual word count. Please send payment with order.

POSITIONS WANTED

DOES YOUR organization need service-man with ability to sell, service and install, whose experience includes 8 years commercial refrigeration and air conditioning installation and service, 2 years industrial pipe fitting and many on the job sales. I am 33 years old. BOX A5732, Air Conditioning & Refrigeration News.

ESTIMATING, DESIGN, drafting and sales engineer with proven capability since 1943, for all type heating, cooling, refrigeration and heat pump systems, desires to exceed \$8500.00 yearly with a sound company offering continuing advancement. Present and previous association with one of top three manufacturers. Write BOX A5733, Air Conditioning & Refrigeration News.

COMMERCIAL REFRIGERATION service engineer, member of the Refrigeration Service Engineers Society. Seven years' experience with Frigidaire, Hussmann and McCray food store and air conditioning products. I am in early twenties, married, currently employed as service manager, have two years of business management experience, three years high school. Desire position preferably with manufacturer. BOX A5734, Air Conditioning & Refrigeration News.

POSITIONS AVAILABLE

BLAST FREEZE Corporation needs men capable of assisting independent food stores in merchandising on premise frozen red meats under an exclusive Blast Freeze franchise. Give complete information by letter to ROBERT B. AYRES, President, 10 Main Street, Park Ridge, Illinois.

MANUFACTURERS' REPRESENTATIVES: Territories available for experienced commercial refrigeration salesman to represent manufacturer of complete line of all temperature ranges in packaged machines. Write, giving personal details and background to: J. R. BEAN, Sales Manager, 2524 Brooklyn Road, Jackson, Michigan.

WANTED: MECHANICAL engineer with heating and air conditioning experience to head up heating department with jobber handling nationally known lines. Write to CLOWE & COWAN, INC., Amarillo, Texas, giving experience record.

TERRITORIES AVAILABLE for experienced salesmen of air conditioning and heating equipment. Write W. B. LONGSHORE, Box 60, Gadsden, Alabama.

OPPORTUNITY IN Texas: Unusual opportunity for experienced sales manager with Texas air conditioning equipment manufacturer. Must have complete knowledge of industry, be responsible for planning and directing nationwide sales program for expanding company. Rare opportunity for right person. P. O. BOX 1157, Fort Worth, Texas.

NEED MANUFACTURERS' agents to represent outstanding line of automatic ice machines in the states of West Virginia, Ohio, Indiana, Michigan, Wisconsin, Minnesota, North Dakota and South Dakota. Give complete resume of previous business experience, territory you desire and lines you currently handle. Write BOX A5736, Air Conditioning & Refrigeration News.

SHEET METAL man or company, with equipment to work with established air conditioning and refrigeration company on a partnership or profit sharing basis. We have all necessary engineering and sales contacts. Will necessitate relocating within 50 miles of Detroit. BOX A5737, Air Conditioning & Refrigeration News.

EQUIPMENT WANTED

WANTED: MANUFACTURERS surplus, outdated or obsolete refrigeration items—expansion & water & shutoff valves, controls, relays, dehydrators, units, tubing, fittings, etc. All sales on a cash close-out basis, large or small quantity. Write or call: COMMERCIAL CONTROLS CO., 257 East 3rd Street, New York 9, N. Y. ORegon 3-7210.

EQUIPMENT FOR SALE

ARCTICAIRE AIR conditioning equipment 2, 3 and 5 ton packaged water chillers, air or water cooled. Direct expansion air conditioning systems 2, 3 and 5 ton, air or water cooled, self contained and remote types. Write for literature and prices. ARCCO, MANUFACTURERS AGENTS, INC., Merchandise Mart Bldg., 2201 Grand Avenue, Kansas City, Missouri.

NEW SILICA-GEL driers complete with flare nuts. 14 cu. in.— $\frac{1}{4}$ " flare—\$1.91. 20 cu. in. $\frac{1}{4}$ " flare—\$2.00. 20 cu. in.— $\frac{3}{8}$ " flare—\$2.12. 32 cu. in.— $\frac{3}{8}$ " flare—\$2.94. Minimum order 10 driers. Orders of \$100.00 or more we pay freight. TECHNICAL RESEARCH CORP., 5735 Cahuenga Boulevard, North Hollywood, California.

BUSINESS OPPORTUNITIES

FOR SALE up to 50% of Air Conditioning and Refrigeration sales and service business. Established ten years as Carrier franchised dealer in large South Florida city. Owner needs business management assistance. Business needs additional capital because of heavy medical expenses in family. Bargain for the right person, write for full details. BOX A5735, Air Conditioning & Refrigeration News.

MISCELLANEOUS

ATTENTION SERVICEMEN: Send for free circulars and bulletins on refrigeration parts and equipment. Real money saving values: WALTER W. STARR, 2833 Lincoln Avenue, Chicago 13, Illinois.

TO THE OWNER OF A REFRIGERATION PARTS WHOLESALE BUSINESS WHO WISHES TO RETIRE

Individual with many years experience in the air conditioning and refrigeration field and excellent personal record in sales engineering, ability and integrity wishes to purchase an established business. Interested where the volume is in the lower or middle part of the six figure bracket so long as the enterprise is sound and in a good potential area.

Would consider a business headed by a person who desires to dispose of controlling interest, yet retain an income from the business he has built.

Box A5731, Air Conditioning & Refrigeration News

WHOLESALE SALES MANAGER

Age 35

Exceptional Record

10 Years Experience with Carrier Equipment

Seeks New Position

Inquire at BOX A5738, Air Conditioning & Refrigeration News

HALF INCH WATER STARTS PUMP

SEE IT AT YOUR WHOLESALE FROM COAST TO COAST

NEWEST KESCO AUTOMATIC 20 FOOT LIFT CONDENSATE PUMP

MONEY BACK GUARANTEE

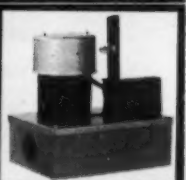
KESCO

PRODUCTS CORP.

Est. 1944

Springfield Gardens 13

New York



ARI Ratings--

(Concluded from Page 1, Col. 4)

tioning & Refrigeration Institute, it was announced by Geo. S. Jones, Jr., ARI managing director.

"Publication of B.t.u. ratings in specifications and other literature by these three big manufacturers," Jones said, "brings to 13 the number of room unit producers who have actually published these ratings."

"In addition to these, three other companies have provided the B.t.u./hr. ratings to ARI, for publication as the institute sees fit, and six have said that they will publish such ratings in future issues of specifications and consumer literature."

Jones' announcement brings up to date the ARI release of Jan. 14, in which it was noted that 10 manufacturers had published ratings, six had given their ratings to ARI, and four others have said that they will publish ratings later.

Twenty-two manufacturers agreed in September, 1956, to make public the B.t.u./hr. ratings of their products as arrived at under ARI test procedure. However, a number of these had their 1957 specifications and consumer literature in process of publication too early to make the tests required which would enable them to state the cooling capacities of their products as provided by the Standard (ARI Standard 110-56). Others did not have the testing facilities ready.

Manufacturers who have already published ratings include (stars indicate latest additions to list):

Airtemp Div., Chrysler Corp.; Carrier Corp.; *Emerson Electric Mfg. Co.; *Friedrich Refrigerators, Inc.; Frigidaire Div.; General Motors Corp.; General Electric Co.; *Gibson Refrigerator Co.; Hotpoint Co.; Hunter Fan & Ventilating Co., Inc.; Kelvinator Div., American Motors Corp.; O. A. Sutton Corp. (Vornado); Westinghouse Electric Corp.; York Corp., a subsidiary of Borg-Warner Corp.

Those who have given ARI their test data and ratings, but have not yet had an opportunity to make them available on specification sheets and other literature are: Birtman Electric Co.; Philco Corp.; and Sears Roebuck & Co.

Jones said that the names of the companies who have said they will provide B.t.u./hr. data as soon as tests are completed will be made public by ARI as soon as the rating figures are made available.

Beals Heads Officers In Fort Worth Group

FORT WORTH, Texas—D. E. Beals of Beals Plumbing & Heating, Inc., has been elected president of the Fort Worth Air Conditioning Association.

Grant H. Johnson, Jr., is first vice president; Robert S. Phillips, second vice president; Max B. Mobley, secretary-treasurer. Directors include Howard E. Decker, W. R. Porterfield, Curtis L. Love, and H. E. "Buck" Cunningham, retiring president.

Col. Edwin D. McCoy continues as executive secretary.

N.Y. Proposal--

(Concluded from Page 1, Col. 2)

1. "No air conditioning unit or other equipment shall project over a public street."

2. "No self-contained air conditioning unit shall be placed within any public hallway, passageway, or stairway."

Industry sources noted that enactment of these new rules may supplement "existing non-enforced regulations" to the extent that no room air conditioning unit now installed, or to be installed, can extend out beyond the face of a building in New York City.

Also, it was stated, self-contained units could not be installed in hallways or lobbies. Under certain conditions, such installations are permitted under the ASA B9.1 Code and the pending New York City code sponsored by the Commerce and Industry Association of New York, Inc., it was said.

Industry sources claim that many New York City regulations are "unnecessarily restrictive." They say the recently-proposed rules "can greatly increase the installation and use cost of air conditioning equipment without due benefit to the public."

Industry representatives are backing the Commerce and Industry Association in opposing certain bills introduced before the City Council.

A recent example of this activity, it was pointed out, was the user group representation at the New York City Council public hearing early in December.

This group vigorously opposed enactment of Council Bills 645, 646, 647, and 648 that, among other things affecting the industry, called for installation of "automatic smoke detector systems" in ventilating and air conditioning systems, it was noted.

ASHAE Show--

(Concluded from Page 1, Col. 5)

biggest in the history of the event, according to E. K. Stevens, manager, who states that the exhibits will take up to 15 to 20% more space than was originally contracted for in the Amphitheatre. (A floor plan of the exhibits, with numbered key to exhibitors, is published on pages 36 and 37 of this issue).

Sponsor of the Exposition is the American Society of Heating & Air-Conditioning Engineers, which is holding a four-day meeting (morning sessions) at the Conrad Hilton hotel, starting Feb. 25.

Admission is by registration only, of such individuals as can show a legitimate interest in the industry. There will be registration desks at the door of the Amphitheatre, but advance registration is possible for those who wish to save time and effort (see advertisement of the International Exposition Co. on page 36 for instructions on advance registration procedure).

In addition to exhibits of complete air conditioning, heating, and ventilating systems for all kinds of applications, there will be exhibits by producers of raw and fabricated materials, special equipment, and component parts.

Perfection Offers Residential Line--

(Concluded from Page 1, Col. 5)

charge of sales and advertising.

The 11 models in its 1957 residential air conditioning line, plus the new Tuckaway series, give Perfection a unit for every type of installation, Millsom said.

Offer 9 Water, Air-Cooled Units

Perfection is showing nine models of air and water-cooled units for the first time. Air-cooled residential units range in size from 2 to 10 tons, while water-cooled residential air conditioners are supplied in 2 to 6-ton sizes. All units are easily adapted to use with any type of warm air furnace, it was stated.

Millsom said the Tuckaway is a completely self-contained air-cooled horizontal air conditioner which may be suspended from the ceiling or installed in existing attic, basement, attached garage, transom, or crawl space.

"The Tuckaway can be integrated into existing heating ducts to provide a completely automatic warm and cool air system," it was pointed out. "Also available are special pre-formed, insulated, and vapor-proofed lightweight ducts for fast, low-cost installation. The Tuckaway is available in full capacities of 1½, 2, and 3 tons."

The new line of air-cooled remote central residential air conditioners in 3 and 5-ton capacities is available with a choice of three different evaporator and coil arrangements. The self-contained water-cooled units are supplied in 2, 3, 4, and 6-ton sizes.

Units Interchangeable For Up, Downflow

The 2, 3, and 4-ton models have blower section and basic cooling unit that can be interchanged for upflow or downflow operation. Each section can be rotated to four positions, affording 30 different air flow applications. This exclusive feature, said Millsom, "enables the installer to meet any installation problem."

In its 1957 heavy-duty commercial air conditioner line, Perfection will offer air-cooled



NEW Perfection Industries "Tuckaway" residential air conditioner for 1957 features 36,000 B.t.u. from two 1¼-hp. compressors. C. W. Millsom, vice president-sales, explains to H. W. Smith, assistant manager of heating and cooling sales, that the model PAS-31 shown here has companion units available in 18,000 and 24,000 B.t.u. The self-contained unit may be suspended from ceiling, installed in existing attic, basement, attached garage, transom, or crawl space.

equipment up to 10-ton capacity and water-cooled units up to 40 tons. Three new water-cooled units being shown dealers for the first time have capacities of 3, 5, and 8 tons. They feature "Free-Blow" circulation, simple ductwork, and quiet operation, it was stated.

Room Unit Line

Six models comprise the new Perfection room air conditioner line—four in the "Silhouette 17" series and two in the "Super-Cooler 30" series. The Silhouette 17 series is available in low amp and normal amp models in ¾ and 1-hp. sizes.

Features on all models are thermostat control, fresh air intake, and moisture removal capacity of 6 gals. per day. Additional features of the deluxe series are stale air exhaust, permanent electrostatic filters, and a sliding door to cover push-button controls. The soft gray finish is a new synthetic enamel especially prepared for use on air conditioners, it was noted.

The Super-Cooler 30 air conditioner is supplied in 1½ and 2-hp. sizes. It is built for residential, commercial, and indus-

trial uses where a compact packaged unit larger than the usual window air conditioner is required, such as in doctors' clinics or for multiple bedroom cooling, according to Perfection.

Perfection's 1957 line of oil and gas-fired warm air furnaces includes basement, high-boy, horizontal, and counterflow models with outputs ranging from 55,000 to 150,000 B.t.u. All models are available with adaptations for summer cooling.

New Horizontal, Oil-Fired Furnace

New to the Perfection line in 1957 is a horizontal oil-fired forced air furnace with 95,000 B.t.u. output "designed to provide low-cost automatic comfort in minimum space. Adaptable for new homes, old home remodeling, or furnace replacement, model OS95 can be suspended from roof rafters, installed on attic floor joists, or suspended from joists in basement, crawl space, attached garage, or utility room."

Counterflow models OC90V and standard model OH134V are deluxe oil-fired counterflow furnaces specifically designed for basement or basementless homes, and can be installed in alcove or utility room. Outputs of 96,000 B.t.u. and 134,000 B.t.u. are available.

"An exclusive Perfection feature in 1957 is Regulaire comfort control," it was stated.

"In operation, a coil of heat-sensitive metal actuates the blower vane, expanding when warmed to open the vane gradually, and contracting when cooled to close the blower vane slowly. The Regulaire maintains uniform temperature by providing a gentle flow of warmth without blasts of heat or cold air."

A new Perfection policy of expanded distribution through exclusive wholesalers was announced earlier. Under this policy, furnace and air conditioning wholesalers will handle the complete furnace line as well as the residential and commercial air conditioning lines, Millsom explained. These wholesalers will also handle Perfection's line of window air conditioners and gas and electric water heaters.

DEAN

GOLD PLATES

for Ice Bank Air Conditioning

MANY SHAPES • MANY SIZES • MANY METALS

"JOB-TAILORED"

to your exact requirements, Dean Cold Plates are low in first cost and in operating cost. Our engineering department will be glad to cooperate in working out your particular problem.

DEAN

PRODUCTS, INC.

1042 DEAN STREET, BROOKLYN 38, N.Y. STerling 9-5400




Choice territories now available for sales representation. Inquiries invited.

For more information about products advertised on this page use Information Center, page 42.

Mitchell Introduces '57 Line--

(Concluded from Page 1, Col. 2)
applied in transom for commercial usage, or installed through-the-wall, Lodge said.

Features of the new unit include two 2-hp. hermetically sealed, factory-charged compressors. Pre-wiring is said to enable installation to be completed by attaching the unit to ductwork and connecting it to a source of electricity.

Removable side panels permit ease of servicing and installation, the company stated. Twin-circuited evaporator coils are included in the unit, and condensate collected from the air is disposed of over the condenser coil to increase efficiency and assure positive water removal, it was added.

Blower Coils Aid Central Installations

Mitchell's new blower coil units make possible "and practical" installation of central air-cooled air conditioning in homes "heated by hot water or steam," Lodge said. They offer an approach to commercial jobs utilizing a ceiling mounted evaporator and blower with remote air-cooled condensing unit, he noted. Designed to match with the "RA" 2, 3, and 5-hp. air-cooled condensing units, these blower coils can be applied to an air-cooled, residential system independent of the furnace blower or, combined with Mitchell Max-Cool pre-fab ducts, offer "an economical system" for hot water or steam heated homes, it was added.

Blower coil units may be applied with accessory decorative front for free air delivery in commercial uses or attached to ducts for central air conditioning distribution and return. They come standard or factory-charged and fitted with quick coupling fittings, it was explained.

Has 5-Hp. Air-Cooled Residential Unit

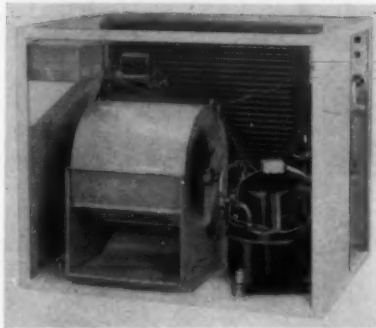
Mitchell's new 5-hp. air-cooled residential air conditioner called "RA-500," is said to be a low-cost adaptable air-cooled unit which consists of two parts—a condensing unit housed in a single weatherproof cabinet and an evaporator unit. Condensing unit may be located in yard, basement, attic, or crawl space, Lodge pointed out.

When used with existing fan, filter, and air distribution ducts of a warm air heating system, the evaporator unit has several possible locations—either over the air supply of a low-boy furnace, under a counterflow, or in the supply air duct of a house for horizontal furnace.

Pre-Charged Tubing Available

Pre-charged tubing is available as are either horizontal or vertical evaporators, the company said. Horizontal unit is for upflow, counterflow, and low-boy furnaces; vertical for horizontal furnaces or ducts.

Equipped with a "quiet, slow-speed blower and motor," the RA-500 has a welded hermetic external spring-mounted compressor, it was explained. It is available in single or three-phase, 230 v., 60-cycle units. Safety devices include the firm's

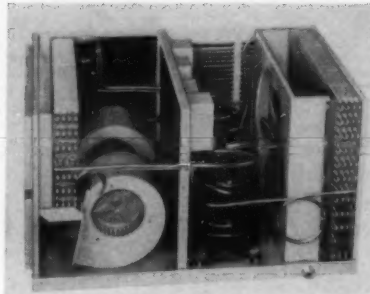


CONDENSER unit of the new "RA-500" residential air conditioner of Mitchell Mfg. Co. It is housed in one weatherproof cabinet.

high-low pressure cutout and louver grilles.

Dimensions of the condensing unit are 39 $\frac{3}{4}$ in. high by 34 $\frac{1}{8}$ in. wide by 48 $\frac{1}{8}$ in. long. The vertical evaporator is 20 by 32 by 3 in., and the horizontal is 18 by 20 by 2 $\frac{1}{4}$ in.

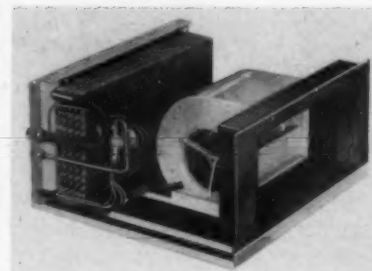
Another item being introduced



TWO 2-hp. hermetically sealed factory-charged compressors are a feature of the "TA-400" central air conditioner introduced by Mitchell.

is the Max-Cool pre-fab duct kit, Lodge announced. Designed to cut installation time in half and eliminate the job of first designing, then fabricating, ducts in the field, the ducts come in two sizes. "DK-4" is a four-outlet installation and "DK-6" has six outlets, he revealed.

Included in the DK-4 kit are six pieces of 10 by 14 by 48-in. embossed aluminum covered with Fiberglas which comprise



CHASSIS of the new "BC" series of residential air conditioners offered by Mitchell. The three-model series is designed to solve the problem of inadequate furnace blowers.

the main duct. Branch ducts come in eight pieces of the same material, each 8 by 8 by 48 in. Other components are a return air duct with filter, four ceiling diffuser assemblies, a transition template, and 60 yds. of pressure sensitive tape.

Kit DK-6 contains eight, main-duct pieces, nine pieces of branch ductwork, and six ceiling diffusers, in addition to the other materials in DK-4.

Calif. Has 4 Refrigeration Apprentice Training Programs

SAN FRANCISCO—Only four counties in California have Joint Apprenticeship Committee programs to develop refrigeration journeymen.

Records of the State Division of Apprenticeship Standards here show five times as many California JAC programs are operating to develop sheet metal journeymen.

Refrigeration JAC programs are operating in San Diego county, Los Angeles county, Alameda county, and San Francisco.

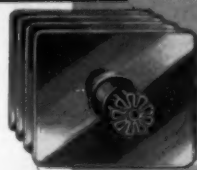
Sheet metal JAC programs are operating in Redding, Marysville, Sacramento county, Stockton, Santa Rosa, Vallejo, Alameda and Contra Costa counties, San Francisco, San Mateo, Jan Jose, Modesto, Fresno, Visalia, Bakersfield, Ventura, San Bernardino, Los Angeles, Long Beach, Santa Ana, and San Diego county.

The Complete Line... DUNHAM-BUSH

... A BONUS TO REFRIGERATION CONTRACTORS

There's a DUNHAM-BUSH unit for every commercial refrigeration need — high or low temperature. To service engineers and contractors this means a bonus in time saved "shopping" for the right unit... installation time saved by knowing the line... engineering costs shaved with the help of DUNHAM-BUSH Sales Engineers who are always available to assist in selection and application. There's a "peace-of-mind" bonus, also, in knowing that latest design, reliably-rated DUNHAM-BUSH units cut down costly trouble calls.

INNER-FIN



BY BUSH

DUNHAM-BUSH

'JF' JET-FLO COOLER

Stainless steel casing. Completely non-ferrous construction throughout. Patented Inner-Fin coil design. Arranged for "suck-through" operation, but supplied with extra fan for "blow-through" arrangement. Units can be wall or ceiling mounted.



DUNHAM-BUSH

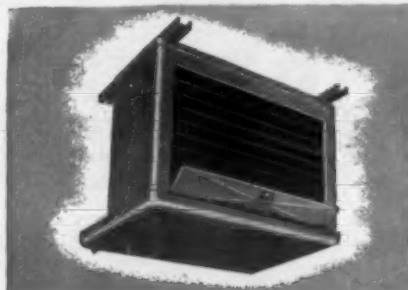
'WJ' UNIT COOLERS

For space-saving installation at juncture of wall and ceiling. Air circulation through 180° radius with no blast.

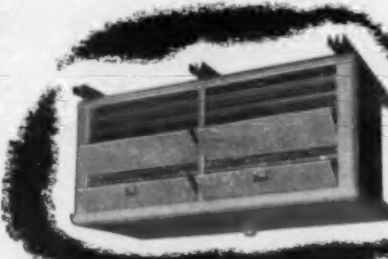
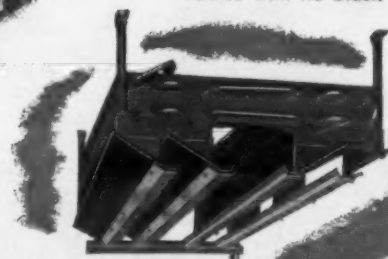


FIN COILS

Wide range of types and sizes to meet diverse requirements. Aluminum fins on copper tubing. Copper Inner-Fins.



'HG' HOT GAS DEFROST UNITS
'ED' ELECTRIC DEFROST UNITS
Inner-Fin coil construction permits rapid defrosting from the inside. No reboilers, complicated piping, other "extras".

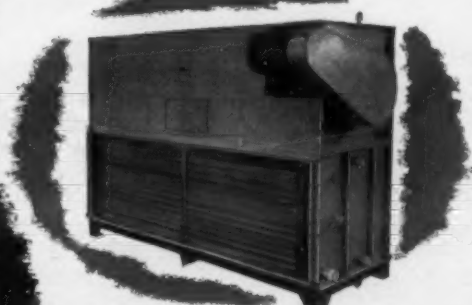


'UC' STANDARD UNIT COOLERS
Ten models to meet any application need. Aluminum fins on copper tubing. Slotted hangers for quick installation.

DUNHAM-BUSH

PLASTI-COOLERS

Jet black plastic baffles eliminate sweating. Baffles pitched for gentle, gravity-type air flow that provides maximum circulation without blast.



'GD' GLYCOL DEFROST UNITS
Product coolers featuring Inner-Fin coils that permit entirely separate defrosting circuit. Available in floor or ceiling models. Assembled defrost circuit kit supplied.

DUNHAM-BUSH

Dunham-Bush, Inc.

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